

**PLANTS AND ANIMALS
WHICH ARE
RARE, THREATENED OR ENDANGERED
WITHIN THE
ISLAND OF NEWFOUNDLAND**

- PROVISIONAL NOTES

By Gerald Collins



PINE MARTEN
Collection of the Newfoundland Museum
(Photo: Manfred Buchheit)

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ABSTRACT

Collins, Gerald. 1986. Plants and Animals which are Rare, Threatened or Endangered within the Island of Newfoundland - Provisional Notes. Technical Bulletin of the Newfoundland Museum, No. 4. 108 pp. + 128 maps.

This work records 128 species of plants and animals considered to be rare, threatened or endangered within the island of Newfoundland. The status of each species may vary elsewhere. Included are 10 species of mosses, 78 species of vascular plants, 5 species of freshwater fishes, 2 species of amphibians, 26 species of birds, and 7 species of land mammals. Other groups have been omitted because of lack of data. The entry for each species refers to descriptive references; present world distribution; and to the known-status, present distribution, habitat preference, and perceived vulnerability of the species within insular Newfoundland.



RÉSUMÉ

Collins, Gerald. 1986. Plants and Animals which are Rare, Threatened or Endangered within the Island of Newfoundland - Provisional Notes. Technical Bulletin of the Newfoundland Museum, No. 4. 108 pp. + 128 maps.

[Collins, Gerald. 1986. Plantes et animaux rares et menacés d'extinction dans l'île de Terre-Neuve - Notes provisoires. Bulletin technique du musée de Terre-Neuve, n° 4, 108 p. + 128 cartes.]

Cet ouvrage décrit 128 espèces de plantes et d'animaux considérées comme rares ou menacées d'extinction dans l'île de Terre-Neuve. L'état des espèces mentionnées peut toutefois différer ailleurs. L'ouvrage comprend 10 espèces de mousses, 78 espèces de plantes vasculaires, 5 espèces de poissons d'eau douce, 2 espèces de batraciens, 26 espèces d'oiseaux et 7 espèces de mammifères terrestres. Les autres groupes ont été omis par manque de données. Les articles sur chacune des espèces renvoient à des références descriptives et présentent la distribution mondiale actuelle des espèces, et lorsque connus, leur distribution actuelle, leurs habitats préférés ainsi que la vulnérabilité apparente des espèces à Terre-Neuve.

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Special recognition is given to Peter Eaton and Bob Wilson of EPS for instigating the project, for securing financial support, and for project management and overview; and to John Maunder of the Newfoundland Museum for his supervision, editorial assistance, and contribution of information.

For providing additional information, assistance and advice, special thanks goes also to Peter Scott, Guy Brassard, and William Montevocchi of the Memorial University of Newfoundland; Ken Curnew, Joe Brazil, Eugene Mercer, Wally Skinner and Oscar Forsey of the Newfoundland Wildlife Division; and William Bruce of the Fisheries and Oceans Canada.

INTRODUCTION

This report includes species which are rare, threatened or endangered within the Island of Newfoundland (all references to "Newfoundland" in this paper refer to INSULAR Newfoundland).

Because of the limited scope of the project, only six groups are examined: mosses, vascular plants, freshwater fishes, amphibians, breeding birds, and land mammals. Marine species (except for those which also occur in fresh water) are not addressed.

It is hoped that the information contained in the report will help in the preservation of Newfoundland's rare, threatened and endangered flora and fauna, by serving as a guide to their locations and vulnerabilities.

The report constitutes the third in a series of similar reports sponsored by the Environmental Protection Service in the Atlantic Region. The other reports are:

Isnor, W. 1981. Provisional Notes on the Rare and Endangered Plants and Animals of Nova Scotia. Curatorial Report Number 46. Nova Scotia Museum, Halifax. 71 pp., 135 pl.

Clayden, S. R., D. F. McAlpine and C. Guidry. 1984. Rare and Vulnerable Species in New Brunswick. Publications in Natural Sciences No. 2. The New Brunswick Museum, Saint John. 95 pp.

[Manuscript was submitted August, 1982. The only changes made to the document up to the time of publication have been editorial ones. A complete update proved impractical and inappropriate.]

FORMAT OF SPECIES ACCOUNTS

- DESCRIPTION:** Gives reference to a general description of a species.
- STATUS:** Gives the status of a species in Newfoundland, as determined from available information. The following terms are used:
- ENDANGERED** - In danger of becoming extirpated throughout all or a significant portion of its range on the Island.
- THREATENED** - Likely to become endangered, if trends continue.
- RARE** - Existing at low numbers, but not likely to be threatened in the foreseeable future. Such a population may be widely distributed, or restricted to a small geographical area or to a specialized habitat.
- UNCOMMON** - May not be found without considerable effort and/or previous knowledge, but not rare.
- PRESENT RANGE:** Gives the range of a species in North America and world-wide. Ranges are taken mainly from the references cited for descriptions.
- DISTRIBUTION IN NEWFOUNDLAND:** Gives the known distribution of a species in Newfoundland. The sources used to determine the distribution are either cited, or noted in the introduction to each group.
- Maps are plotted using symbols to indicate where a species has been recorded. A symbol may represent more than one collection. In some cases, specific locations could not be determined, and the position of symbols is approximate.

HABITAT: Gives the habitat of a species in Newfoundland. The sources used to determine the habitat are either cited, or noted in the introduction to each group.

VULNERABILITY: Gives the vulnerabilities of a species, as far as can be assessed.

PLANTS

Newfoundland has approximately twelve hundred and thirty-six species of vascular plants, seventy-eight of which are included in this report; and approximately four hundred and forty-five species of mosses, ten of which appear in this report.

Information on the habitat and Newfoundland distribution of the mosses was kindly supplied by Guy Brassard of Memorial University. Information on vascular plants was obtained primarily from maps and records supplied by Peter Scott, Curator of the Agnes Marion Ayre Herbarium at Memorial University. Additional distribution and habitat information was obtained from the Newfoundland Museum Herbarium and from the Canadian Forestry Service Herbarium at St. John's.

In the vascular plant section, local habitat information generally follows that given by Fernald (1950), and in most cases the information is exactly as it appears in that reference.

It should be noted that work on Newfoundland mosses is still at a relatively early stage. The group was included in this report on the basis of what is known to date.

MOSSES

Family ANDREAEEACEAE

Andreaea blyttii B. S. G.

- Description: Refer to Grout (1928-1940), vol. I, p. 3.
- Status: Rare.
- Present Range: Greenland, Arctic America, Washington and California; extremely rare in eastern North America.
- Distribution in Newfoundland: (See Map 1). Known only from the Big Level Region, Gros Morne National Park.
- Habitat: No information available.
- Vulnerability: Site accessible only by airplane, so this species is unlikely to be disturbed.

Andreaea nivalis Hook.

- Description: Refer to Smith (1978), p. 86.
- Status: Rare.
- Present Range: Europe, Greenland, western North America and Newfoundland.
- Distribution in Newfoundland: (See Map 2). The Big Level area in Gros Morne National Park is the only known locality for this species in eastern North America.
- Habitat: No information available.
- Vulnerability: Same as for Andreaea blyttii.

Family SELIGERIACEAE

Seligeria brevifolia (Lindb.) Lindb.

- Description: Refer to Nyholm (1954-1969).
Status: Rare.
Present Range: Siberia, north and central Europe; in North America only in New Brunswick and Newfoundland.
Distribution in Newfoundland: (See Map 3). Colliers Bay, Codroy Valley.
Habitat: No information available.
Vulnerability: Cannot be assessed at present.

Family DICRANACEAE

Aongstroemia longipes (Somm.) B. S. G.

- Description: Refer to Smith (1978), p. 139.
Status: Rare.
Present Range: Siberia, Europe, Iceland, Greenland and North America. Known only from two sites in eastern North America.
Distribution in Newfoundland: (See Map 4). Tilt Cove.
Habitat: No information available.
Vulnerability: Site is near a mine waste area; possibly in danger of being disturbed.

Kiaeria falcata (Hedw.) Heg.

- Description: Refer to Smith (1978), pp. 150-151.
- Status: Rare.
- Present Range: British Columbia, Yukon, Alberta, Newfoundland; also north, west and central Europe.
- Distribution in Newfoundland: (See Map 5). Big Level region (Gros Morne National Park).
- Habitat: No information available.
- Vulnerability: Cannot be assessed at present.

Family POTTIACEAE

Tortula muralis Hedw.

- Description: Refer to Smith (1978), p. 218.
- Status: Rare.
- Present Range: Cosmopolitan. Rare in eastern North America.
- Distribution in Newfoundland: (See Map 6). St. John's.
- Habitat: Grows in mortar of brick or stone walls.
- Vulnerability: Cannot be assessed at present.

Family GRIMMIACEAE

Coscinodon cribrosus (Hedw.) Spruce

- Description: Refer to Smith (1978), pp. 304-306.
- Status: Rare.
- Present Range: Asia, Europe and North America. Rare in eastern North America.
- Distribution in Newfoundland: (See Map 7). Cox's Cove.
- Habitat: No information available.
- Vulnerability: Cannot be assessed at present.

Family OEDIPODIACEAE

Oedipodium griffithianum (Dicks.) Schwaegr.

- Description: Refer to Smith (1978), pp. 350-352.
- Status: Rare.
- Present Range: Japan, Scandinavia, Greenland, Alaska; the only two localities for eastern North America are in Newfoundland.
- Distribution in Newfoundland: (See Map 8). Killdevil Mountain (Gros Morne National Park) and Table Mountain (Port aux Basques area).
- Habitat: No information available.
- Vulnerability: Cannot be assessed at present.

Family BRYACEAE

Mielichhoferia macrocarpa (Hook. ex Drumm.) Br. and Sch. ex Jaeg. & Saurb.

- Description: Refer to Grout (1928-1940), vol. 2, p. 185.
- Status: Rare.
- Present Range: Greenland, Arctic America, and south in the Rocky Mountains to Colorado; only locality in eastern North America is in Newfoundland.
- Distribution in Newfoundland: (See Map 9). Straitsview.
- Habitat: No information available.
- Vulnerability: Cannot be assessed at present.

Family THUIDIACEAE

Thuidium tamariscinum (Hedw.) B. S. G.

- Description: Refer to Smith (1978), pp. 533-534.
- Status: Rare.
- Present Range: Japan, Central Europe, Faroes, Azores, Madeira, Jamaica; Newfoundland is the only North American locality.
- Distribution in Newfoundland: (See Map 10). St. John's, Placentia and Northwest Brook (Trepassey Bay).
- Habitat: No information available.
- Vulnerability: At St. John's and Placentia, species grows in areas where it could easily be disturbed.

VASCULAR PLANTS

Order EQUISETALES

Family EQUISETACEAE

There are nine species in Newfoundland. One is considered significant in this report.

Equisetum hyemale L. Rough Horsetail.

Description: Refer to Fernald (1950), p. 8.

Status: Rare.

Present Range: From central Alaska and northern British Columbia to Great Slave Lake, southern Ontario, Quebec, New Brunswick, Nova Scotia and Newfoundland; south to northern Florida, Mexico and California; Ireland; Eurasia.

Distribution in Newfoundland: (See Map 11). Middle Birchy Pond.

Habitat: Dry or moist sandy shores.

Vulnerability: Vulnerable to logging and damming.

Order OPHIOGLOSSALES

Family OPHIOGLOSSACEAE

There are six species in Newfoundland. One is considered significant for this report.

Botrychium lanceolatum (Gmel.) Angstr. Triangle Grape Fern.

Description: Refer to Fernald (1950), p. 22.

Status: Rare.

Present Range: From Aleutian Islands, southern Alaska and central Yukon, through British Columbia and southwest Alberta to Washington, Utah and Colorado; Great Lakes region, Quebec to Newfoundland; south to Ohio, Pennsylvania and New Jersey; Greenland, Iceland and Eurasia.

Distribution in Newfoundland: (See Map 12). Petries, Tompkins, Ship Cove (Sacred Bay).

Habitat: Dry meadows and slopes.

Vulnerability: Vulnerable to soil disturbances.

Order EUFILICALES

Family POLYPODIACEAE

There are twenty-seven species in Newfoundland. Three are considered significant for this report.

Cystopteris montana (Lam.) Bernh. Mountain Bladder Fern.

Description: Refer to Fernald (1950), p. 30.

Status: Rare.

Present Range: From Alaska to Greenland; south to northern Newfoundland, Quebec, Ontario, and the mountains of Colorado and British Columbia; Eurasia.

Distribution in Newfoundland: (See Map 13). Savage Cove.

Habitat: Damp calcareous slopes and thickets.

Vulnerability: Since this species is known from only one locality on the coastal limestone barrens, it could be eliminated by any form of road construction.

Dennstaedtia punctilobula (Michx.) Moore Hay-scented Fern.

Description: Refer to Fernald (1950), p. 39.

Status: Rare.

Present Range: Ontario, Quebec, New Brunswick, Nova Scotia, Newfoundland; south to Arkansas and Georgia.

Distribution in Newfoundland: (See Map 14). McCallum (recorded as "Balena").

Habitat: Damp open talus slope.

Vulnerability: Cannot be assessed at present.

Athyrium alpestre (Hoppe) Rylands

Description: Refer to Fernald (1950), p. 41.

Status: Rare.

Present Range: Eurasia; Iceland; Newfoundland.

Distribution in Newfoundland: (See Map 15). Deer Pond, Barr'd Harbour, Doctor's Hills (all in Highlands of St. John area); Lawrence Pond (Upper Gullies).

Habitat: Wet, mossy or bushy slopes and stream margins in quartzite rock.

Vulnerability: Vulnerable to road construction.

Order CONIFERAE

Family ABIETACEAE

There are ten species in Newfoundland. One is considered significant for this report.

Pinus resinosa Ait. Red Pine.

- Description: Refer to Fernald (1950), p. 58.
- Status: Rare.
- Present Range: Manitoba to Newfoundland, south to Nova Scotia and the northeastern United States.
- Distribution in Newfoundland: (See Map 16). Burnt Berry Brook area, Sandy Lake and area, Gambo and area, Terra Nova area, near Bishop's Falls, near Point Leamington, Glovertown area .
- Habitat: Dry woods and sandy ericaceous barrens.
- Vulnerability: Vulnerable to fire and gravel pitting. Has provincial protection at the Pine Acres site near Gambo under the Development (Areas) Lands Act. Protection elsewhere is haphazard, though several bodies are pushing for formal province-wide protection.

Order HELOBIAE

Family ZOSTERACEAE

There are twenty-one species in Newfoundland. Two are considered significant for this report.

Potamogeton vaginatus Turcz. Sheathed Pondweed.

Description: Refer to Fernald (1950), p. 70.

Status: Rare.

Present Range: Alaska to Labrador, south to Newfoundland and the Maritime Provinces, southern Quebec and the northern United States.

Distribution in Newfoundland: (See Map 17). Restricted to the Great Northern Peninsula at East Brook (St. Barbe Bay) and Flower's Cove.

Habitat: Deep fresh or brackish water.

Vulnerability: Vulnerable to loss of habitat through drainage, filling in of ponds, and other activities associated with road construction. May also be vulnerable to water pollution.

Potamogeton friesii Rupr. Grassy Pondweed.

Description: Refer to Fernald (1950), pp. 71-72.

Status: Rare.

Present Range: Mackenzie District of Northwest Territories to Newfoundland; south locally to Nova Scotia and through the southeastern United States.

Distribution in Newfoundland: (See Map 18). Port au Port, St. George's Pond (George's Lake), Windsor Lake.

Habitat: Calcareous or brackish waters.

Vulnerability: Vulnerable to any disturbance (drainage, water pollution) which would result in habitat loss. May also be vulnerable to cottage development.

Family ALISMATACEAE

There are two species in Newfoundland. One is considered significant for this report.

Alisma triviale Pursh Water Plantain.

- Description: Refer to Fernald (1950), p. 84
- Status: Rare; introduced.
- Present Range: British Columbia to Quebec, Nova Scotia, Newfoundland; south through the United States.
- Distribution in Newfoundland: (See Map 19). Deer Lake.
- Habitat: Shallow water, muddy shores, marshes, ditches.
- Vulnerability: Vulnerable to logging operations and damming.

Order GLUMIFLORAE

Family POACEAE

There are one hundred and one species in Newfoundland. Five are considered significant for this report.

Festuca scabrella Torr. Rough Fescue.

- Description: Refer to Fernald (1950), p. 107.
- Status: Rare.
- Present Range: British Columbia to Manitoba, Quebec, Newfoundland; south to North Dakota, Colorado and Oregon.
- Distribution in Newfoundland: (See Map 20). Blowidon Mountains, Bay of Islands, Serpentine Lake, Tompkins.
- Habitat: Peaty and rocky meadows, serpentine tableland and barrens.
- Vulnerability: Cannot be assessed at present.

Deschampsia atropurpurea (Wahlenb.) Scheele Mountain Hair Grass.

- Description: Refer to Fernald (1950), pp. 147-148.
- Status: Rare.
- Present Range: Labrador to northern Newfoundland and the mountains of eastern Quebec, northern New England, northern New York; Alaska to Colorado and Oregon; Eurasia.
- Distribution in Newfoundland: (See Map 21). Highlands of St. John.
- Habitat: Wet quartzite cliffs and slopes.
- Vulnerability: Vulnerable to road construction.

Danthonia intermedia Vasey Timber Oatgrass.

- Description: Refer to Fernald (1950), p. 150.
- Status: Rare.
- Present Range: Alaska, Mackenzie District of the Northwest Territories; south to the southwestern United States; Quebec, eastern Labrador, Newfoundland.
- Distribution in Newfoundland: (See Map 22). Bonne Bay, North Arm (Bay of Islands).
- Habitat: Serpentine or magnesium limestone mountains.
- Vulnerability: Cannot be assessed at present.

Calamagrostis purpurascens R. Br. Purple Reedgrass.

- Description: Refer to Fernald (1950), p. 155.
- Status: Rare.
- Present Range: Northwestern United States, Minnesota, Quebec, Greenland; south to Newfoundland.
- Distribution in Newfoundland: (See Map 23). Bay of Islands.
- Habitat: Calcareous cliffs.
- Vulnerability: Cannot be assessed at present.

Milium effusum L. Millet Grass.

- Description: Refer to Fernald (1950), p. 178.
- Status: Rare.
- Present Range: Northern Newfoundland to western Ontario; south to Nova Scotia and the northeastern United States; Eurasia.
- Distribution in Newfoundland: (See Map 24). Small areas at Highlands of St. John and Ingornechoix Bay.
- Habitat: Rich (mostly calcareous) woods, thickets and glades.
- Vulnerability: Vulnerable to road construction.

Family CYPERACEAE

There are one hundred and thirty-two species in Newfoundland. Fourteen are considered significant for this report.

Scirpus validus Vahl Great Bulrush.

- Description: Refer to Fernald (1950), p. 270.
- Status: Rare.
- Present Range: Southern Alaska to Newfoundland; south to Nova Scotia, eastern and southern United States; tropical America.
- Distribution in Newfoundland: (See Map 25). Hugh's Brook, Upper Ferry.
- Habitat: Brackish or fresh shallow water and marshes.
- Vulnerability: Vulnerable to drainage.

Eriophorum callitrix Cham. Beautiful-haired Cottongrass.

- Description: Refer to Fernald (1950), p. 277.
- Status: Rare.
- Present Range: Greenland and Baffin Island; south to northern Newfoundland.
- Distribution in Newfoundland: (See Map 26). Restricted to the coastal limestone barrens of the northwest coast from Cook's Harbour to Savage Cove.
- Habitat: Calcareous peat.
- Vulnerability: Vulnerable to road construction and upgrading.

Cladium mariscoides (Muhl.) Torr. Twig Rush.

- Description: Refer to Fernald (1950), p. 290.
- Status: Rare.
- Present Range: Saskatchewan, Minnesota, northern Illinois, southern Quebec, Nova Scotia, Newfoundland; south to Florida and Alabama.
- Distribution in Newfoundland: (See Map 27). Harry's Brook, Notre Dame Bay.
- Habitat: Swamps, marshes and sandy shores or pond margins (either brackish or fresh).
- Vulnerability: Vulnerable to drainage.

Carex capitate L. Headed Sedge.

- Description: Refer to Fernald (1950), p. 301.
- Status: Rare.
- Present Range: Alaska to Greenland, south to northwest Newfoundland, Quebec and New Hampshire; locally along the Cordillera to Mexico and California; southern South America; Eurasia.
- Distribution in Newfoundland: (See Map 28). Big Brook, Pistolet Bay.
- Habitat: Peats and gravels.
- Vulnerability: Vulnerable to road construction and upgrading.

Carex langeana Fern. Lange's Sedge.

- Description: Refer to Fernald (1950), p. 301.
- Status: Rare.
- Present Range: Newfoundland; Greenland.
- Distribution in Newfoundland: (See Map 29). Two sites at Gargamelle Cove (Ingornachoix Bay).
- Habitat: Peaty limestone barrens.
- Vulnerability: Vulnerable to road construction and upgrading.

Family CYPERACEAE

There are one hundred and thirty-two species in Newfoundland. Fourteen are considered significant for this report.

Scirpus validus Vahl Great Bulrush.

- Description: Refer to Fernald (1950), p. 270.
- Status: Rare.
- Present Range: Southern Alaska to Newfoundland; south to Nova Scotia, eastern and southern United States; tropical America.
- Distribution in Newfoundland: (See Map 25). Hugh's Brook, Upper Ferry.
- Habitat: Brackish or fresh shallow water and marshes.
- Vulnerability: Vulnerable to drainage.

Eriophorum callitrix Cham. Beautiful-haired Cottongrass.

- Description: Refer to Fernald (1950), p. 277.
- Status: Rare.
- Present Range: Greenland and Baffin Island; south to northern Newfoundland.
- Distribution in Newfoundland: (See Map 26). Restricted to the coastal limestone barrens of the northwest coast from Cook's Harbour to Savage Cove.
- Habitat: Calcareous peat.
- Vulnerability: Vulnerable to road construction and upgrading.

Cladium mariscoides (Muhl.) Torr. Twig Rush.

- Description: Refer to Fernald (1950), p. 290.
- Status: Rare.
- Present Range: Saskatchewan, Minnesota, northern Illinois, southern Quebec, Nova Scotia, Newfoundland; south to Florida and Alabama.
- Distribution in Newfoundland: (See Map 27). Harry's Brook, Notre Dame Bay.
- Habitat: Swamps, marshes and sandy shores or pond margins (either brackish or fresh).
- Vulnerability: Vulnerable to drainage.

Carex capitata L. Headed Sedge.

- Description: Refer to Fernald (1950), p. 301.
- Status: Rare.
- Present Range: Alaska to Greenland, south to northwest Newfoundland, Quebec and New Hampshire; locally along the Cordillera to Mexico and California; southern South America; Eurasia.
- Distribution in Newfoundland: (See Map 28). Big Brook, Pistolet Bay.
- Habitat: Peats and gravels.
- Vulnerability: Vulnerable to road construction and upgrading.

Carex langeana Fern. Lange's Sedge.

- Description: Refer to Fernald (1950), p. 301.
- Status: Rare.
- Present Range: Newfoundland; Greenland.
- Distribution in Newfoundland: (See Map 29). Two sites at Gargamelle Cove (Ingornechoix Bay).
- Habitat: Peaty limestone barrens.
- Vulnerability: Vulnerable to road construction and upgrading.

Carex vulpinoidea Michx. Fox-tail Sedge.

- Description: Refer to Fernald (1950), p. 308.
- Status: Rare.
- Present Range: Southern British Columbia to Newfoundland, and south in the United States.
- Distribution in Newfoundland: (See Map 30). St. George's Pond [George's Lake], Tilt Cove.
- Habitat: Damp grassy or turfy slopes and meadows.
- Vulnerability: Tilt Cove site may become vulnerable to mining.

Carex silicea Olney Sand Sedge.

- Description: Refer to Fernald (1950), pp. 326-327.
- Status: Rare.
- Present Range: Magdalen Islands, Gaspé Peninsula, Newfoundland; south to Maryland.
- Distribution in Newfoundland: (See Map 31). St. George's, Swale Island (Newman Sound).
- Habitat: Maritime sands and rocks.
- Vulnerability: Cannot be assessed at present.

Carex praticola Rydb. Prairie Sedge.

- Description: Refer to Fernald (1950), p. 328.
- Status: Rare.
- Present Range: Eastern Alaska, Yukon to Labrador; south to Newfoundland, Nova Scotia and northeastern United States.
- Distribution in Newfoundland: (See Map 32). Saddle Mountain (Tompkins).
- Habitat: Open woods and meadows.
- Vulnerability: Possibly vulnerable to agriculture, recreation and logging.

Carex norvegica Retz. Norwegian Sedge.

- Description: Refer to Fernald (1950), p. 344.
- Status: Rare.
- Present Range: Manitoba, Baffin Island, Ungava District; south to Newfoundland; Greenland; northern Eurasia.
- Distribution in Newfoundland: (See Map 33). Quirpon Island, Quirpon Harbour, Noddy Bay, Cape Onion.
- Habitat: Turfy slopes and crests.
- Vulnerability: Cannot be assessed at present.

Carex houghtonii Torr. Houghton's Sedge.

- Description: Refer to Fernald (1950), p. 349.
- Status: Rare.
- Present Range: Alberta to Newfoundland; south to northeastern United States.
- Distribution in Newfoundland: (See Map 34). Indian River, Riverhead Brook, Mary Ann Brook, Bishops Falls, Grand Falls.
- Habitat: Dry acid sands, gravels and clearings.
- Vulnerability: Vulnerable to logging, dam construction and fire.

Carex crowei Dew. Crowe's Sedge.

- Description: Refer to Fernald (1950), p. 357.
- Status: Rare.
- Present Range: Alberta to Quebec, Newfoundland; south to northeastern and northwestern United States.
- Distribution in Newfoundland: (See Map 35). Port au Choix.
- Habitat: Calcareous shores, gravels and meadows.
- Vulnerability: Cannot be assessed at present.

Carex katahdinensis Fern. Katahdin Sedge.

- Description: Refer to Fernald (1950), p. 358.
- Status: Rare.
- Present Range: Ontario, Quebec (Lake St. John), Maine (Mt. Katahdin); locally in central Newfoundland.
- Distribution in Newfoundland: (See Map 36). Rushy Pond, Grand Falls.
- Habitat: Gravelly and siliceous rocky shores.
- Vulnerability: Cannot be assessed at present.

Carex lacustris Willd. Shore Sedge.

- Description: Refer to Fernald (1950), p. 372.
- Status: Rare.
- Present Range: Southern Manitoba to Quebec; Anticosti; Newfoundland; south to Nova Scotia and northeastern United States.
- Distribution in Newfoundland: (See Map 37). Stephenville, Clarendville.
- Habitat: Calcareous or circumneutral swamps and shallow water.
- Vulnerability: Vulnerable to drainage.

Carex hystrix Muhl. Porcupine Sedge.

- Description: Refer to Fernald (1950), p. 374.
- Status: Rare.
- Present Range: Alberta to Quebec, New Brunswick, Prince Edward Island, Newfoundland; south to New Jersey, Tennessee, Missouri, and the southwestern United States.
- Distribution in Newfoundland: (See Map 38). Serpentine River.
- Habitat: Swamps and shores, chiefly calcareous.
- Vulnerability: Vulnerable to habitat destruction due to drainage.

Order LILIIFLORAE

Family JUNCACEAE

There are twenty-eight species in Newfoundland. Three are considered significant for this report.

Juncus compressus Jacq. Compressed Rush.

Description: Refer to Fernald (1950), p. 403.

Status: Rare.

Present Range: Eastern Ontario to Nova Scotia, Prince Edward Island, Newfoundland; Eurasia.

Distribution in Newfoundland: (See Map 39). Curling.

Habitat: Boggy meadows and wet grassy slopes.

Vulnerability: Vulnerable to urban development.

Juncus longistylis Torr. Long-styled Rush.

Description: Refer to Fernald (1950), p. 409.

Status: Rare.

Present Range: British Columbia to Manitoba; south to California, Arizona, New Mexico, Nebraska; local in northern Michigan, Detroit River, Ontario; Newfoundland.

Distribution in Newfoundland: (See Map 40). Bay of Islands, Barachois Brook, St. John's.

Habitat: Damp gravelly or sandy shores.

Vulnerability: Vulnerable to recreation and tourism, since the two west coast sites are situated close to provincial parks. St. John's site is particularly vulnerable to habitat elimination through urban expansion.

Luzula acuminata Ref. Pointed Woodrush.

Description: Refer to Fernald (1950), p. 417.

Status: Rare.

Present Range: Saskatchewan to Nova Scotia, southern Newfoundland; south through the eastern United States.

Distribution in Newfoundland: (See Map 41). Tompkins, Cape St. Mary's.

Habitat: Woods, clearings and bluffs.

Vulnerability: At Tompkins, vulnerable to agricultural activity. At Cape St. Mary's, vulnerable to sheep grazing.

Order LILIIFLORAE

Family LILIACEAE

There are seventeen species in Newfoundland. One is considered significant for this report.

Smilacina racemosa (L.) Desf. False Solomon's Seal.

- Description: Refer to Fernald (1950), p. 439.
- Status: Rare.
- Present Range: British Columbia to Quebec, Nova Scotia, Newfoundland; south to northeastern United States.
- Distribution in Newfoundland: (See Map 42). Great Codroy River, Lewis Hills.
- Habitat: Woods, clearings and bluffs.
- Vulnerability: Vulnerable to agricultural activities in Great Codroy area.

Order MICROSPERMAE

Family ORCHIDACEAE

There are thirty-three species in Newfoundland. Three are considered significant for this report.

Platanthera albida (L.) Lindl. var. straminea (Fern.) Luer White Orchid.

Description: Refer to Fernald (1950), p. 470.

Status: Rare.

Present Range: Northern Newfoundland.

Distribution in Newfoundland: (See Map 43). Cape Norman.

Habitat: Limestone barrens.

Vulnerability: May be vulnerable to gravel-pitting for road construction.

Platanthera hookeri Torr. Hooker's Orchid.

Description: Refer to Fernald (1950), p. 472.

Status: Rare.

Present Range: Manitoba to Ontario, Nova Scotia, Newfoundland; south to northeastern United States.

Distribution in Newfoundland: (See Map 44). Barachois Pond Provincial Park.

Habitat: Limestone barrens.

Vulnerability: Although protected within the park, may still be vulnerable to the constant pressures of park users.

Listera borealis Morong Northern Twayblade.

Description: Refer to Fernald (1950), p. 482.

Status: Rare.

Present Range: Alaska to the MacKenzie region of the Northwest Territories, Hudson's Bay region, Quebec, Mingan Islands and Anticosti, northwestern Newfoundland; south to the mountains of southern British Columbia, Idaho and Colorado.

Distribution in Newfoundland: (See Map 45). St. John Bay.

Habitat: Dryish humus, chiefly beneath dwarf spruce and other shrubs on limestone.

Vulnerability: Vulnerable to road construction and upgrading.

Order MYRICALES

Family MYRICACEAE

There are two species in Newfoundland. One is considered significant for this report.

Myrica pensylvanica Loisel. Bayberry.

Description: Refer to Fernald (1950), p. 524.

Status: Rare.

Present Range: Eastern New Brunswick, Magdalen Islands, Newfoundland; south to North Carolina; locally inland to northern Ohio.

Distribution in Newfoundland: (See Map 46). Frenchman's Cove (Burin Peninsula), Bay D'Espoir, Bay of Islands.

Habitat: Dry or sterile soil near coast.

Vulnerability: In the Bay D'Espoir area the species may be vulnerable to hydro development. At Frenchman's Cove the species is vulnerable to grazing animals.

Order POLYGONALES

Family POLYGONACEAE

There are thirty-one species in Newfoundland. Two are considered significant for this report.

Polygonum allocarpum Blake Different-fruited Knotweed.

- Description: Refer to Fernald (1950), p. 578.
- Status: Rare.
- Present Range: Shores of James Bay, Quebec, Anticosti, Newfoundland; south to the coast of Maine.
- Distribution in Newfoundland: (See Map 47). Big Barachois (Burgoyne-Lapointe area).
- Habitat: Sandy, gravelly or rocky seacoast.
- Vulnerability: Cannot be assessed at present.

Polygonum ciliinode Michx. Ciliate Cornbind.

- Description: Refer to Fernald (1950), p. 588.
- Status: Rare.
- Present Range: Saskatchewan to Newfoundland; south to northeastern United States.
- Distribution in Newfoundland: (See Map 48). Grand Falls.
- Habitat: Rocky slopes and borders of woods.
- Vulnerability: Cannot be assessed at present.

Order CENTROSPERMAE

Family PORTULACACEAE

There are three species in Newfoundland. One is considered significant for this report.

Claytonia caroliniana Michx. Carolina Spring Beauty.

- Description: Refer to Fernald (1950), p. 610.
- Status: Rare.
- Present Range: Saskatchewan to Newfoundland; south to northern United States.
- Distribution in Newfoundland: (See Map 49). Scattered along the southwest coast (Codroy Valley to Bay of Islands).
- Habitat: Alluvial thickets, upland slopes and rich open woods.
- Vulnerability: Vulnerable to road construction and other soil disturbances, including farming and drainage systems.

Family CARYOPHYLLACEAE

There are thirty-five species in Newfoundland. One is considered significant for this report.

Cerastium ~~terre-novae~~ Fernald and Wieg. Newfoundland Chickweed.

- Description: Refer to Fernald (1950), p. 626.
- Status: Rare.
- Present Range: Newfoundland.
- Distribution in Newfoundland: (See Map 50). Woody Point, Blomidon Mountains, Serpentine River, Cook's Brook.
- Habitat: Serpentine gravel, sands and rocky tablelands.
- Vulnerability: Cannot be assessed at present.

Order RANALES

Family RANUNCULACEAE

There are thirty-one species in Newfoundland. Three are considered significant for this report.

Ranunculus *amelinii* DC. Yellow Water Crowfoot.

- Description: Refer to Fernald (1950), p. 648.
- Status: Rare.
- Present Range: Alaska to Newfoundland; south across the northern United States.
- Distribution in Newfoundland: (See Map 51). Mouth of Robinson's River.
- Habitat: Clear cold pools and shores.
- Vulnerability: Vulnerable to pollutants which could foul the clear pools it inhabits.

Ranunculus *pedatifidus* Sm. Bird's-foot Buttercup.

- Description: Refer to Fernald (1950), p. 850.
- Status: Rare.
- Present Range: Arctic regions; south to Keewatin, Alberta, Quebec, northwestern Newfoundland.
- Distribution in Newfoundland: (See Map 52). Raleigh, Ha Ha Mountains.
- Habitat: Calcareous and turfy shelves and crests of cliffs.
- Vulnerability: Cannot be assessed at present.

Anemone riparia Fern. Thimbleweed.

Description: Refer to Fernald (1950), p. 682.

Status: Rare.

Present Range: Southern British Columbia to Newfoundland; south to northwestern United States.

Distribution in Newfoundland: (See Map 53). Harry's Brook, Gallants.

Habitat: Calcareous ledges and gravelly shores.

Vulnerability: Vulnerable to logging and damming.

Order RHOEADALES

Family CRUCIFERAE

There are fifty-six species in Newfoundland. Three are considered significant for this report.

Draba nivalis Lilj. Snow Whitlowgrass.

- Description: Refer to Fernald (1950), p. 694.
- Status: Rare.
- Present Range: Arctic; south to northern Manitoba, Quebec, Newfoundland; Eurasia.
- Distribution in Newfoundland: (See Map 54). Eastern side of Pistolet Bay to Quirpon Island, Conche area, Bay of Islands area.
- Habitat: Calcareous rocks.
- Vulnerability: Cannot be assessed at present.

Braya humilis (C.A. Mey.) Robins. var. abbei (Bocher) Boivin Low Braya.

- Description: Refer to Scoggin (1978-1979), pp. 802-803.
- Status: Rare.
- Present Range: Newfoundland.
- Distribution in Newfoundland: (See Map 55). Coastal limestone barrens from Pistolet Bay to St. Barbe Bay, Table Mountain (Port au Port).
- Habitat: Pockets and crevices in limestone.
- Vulnerability: Any nearby road construction could jeopardize this seemingly restricted population.

Erysimum coarctatum Fern. Pressed Treacle Mustard.

Description: Refer to Fernald (1950), p. 713.

Status: Rare.

Present Range: Mingan Islands, Anticosti, eastern Gaspé Peninsula,
Newfoundland.

Distribution in (See Map 56). Chimney Cove.
Newfoundland:

Habitat: Calcareous cliffs and gravels.

Vulnerability: Cannot be assessed at present.

Order ROSALES

Family CRASSULACEAE

There are five species in Newfoundland. One is considered significant for this report.

Tillaea aquatica L. Aquatic Pigmy Weed.

Description: Refer to Fernald (1950), p. 731.

Status: Rare.

Present Range: Washington, Utah, Wyoming, Minnesota, south to Mexico, Texas, Louisiana; Quebec to Newfoundland, south to Maryland; Europe; northern Africa.

Distribution in Newfoundland: (See Map 57). Argentina.

Habitat: Margins of pools and on estuarine shores.

Vulnerability: Cannot be assessed at present.

Family SAXIFRAGACEAE

There are nineteen species in Newfoundland. One is considered significant for this report.

Saxifraga stellaris L. Starry Saxifrage.

- Description: Refer to Fernald (1950), p. 738.
- Status: Rare.
- Present Range: Arctic; south to Newfoundland and Maine; Eurasia.
- Distribution in Newfoundland: (See Map 58). Highlands of St. John.
- Habitat: Mossy alpine rocks.
- Vulnerability: Known from one very restricted locality; road construction could be particularly devastating.

Family ROSACEAE

There are seventy-five species in Newfoundland. Two are considered significant for this report.

Potentilla usticapensis Fern. Burnt Cape Cinquefoil.

- Description: Refer to Fernald (1950), p. 808.
- Status: Rare.
- Present Range: Newfoundland.
- Distribution in Newfoundland: (See Map 58). Burnt Cape (Northern Newfoundland).
- Habitat: Dry limestone gravel.
- Vulnerability: Cannot be assessed at present.

Dryas drummondii Richards. Toothleaf Mountain Avena.

Description: Refer to Fernald (1950), p. 814.

Status: Rare.

Present Range: Alaska to MacKenzie district of Northwest Territories, south to Oregon and Montana; Slate Island (near Thunder Bay), Gaspé Peninsula, Anticosti, Newfoundland.

Distribution in Newfoundland: (See Map 60). Serpentine Lake, Corner Brook, Humber River, Goose Arm and Wild Cove (both near Corner Brook).

Habitat: Calcareous cliffs, lakes and river gravels.

Vulnerability: Vulnerable to erosion of cliff and river gravel habitats.

Family LEGUMINOSAE

There are twenty-nine species in Newfoundland. Three are considered significant in this report.

Astragalus streptopus Fern. Carpet Milkvetch.

Description: Refer to Fernald (1950), p. 909.

Status: Rare.

Present Range: Newfoundland.

Distribution in Newfoundland: (See Map 61). Pistolet Bay.

Habitat: Sandy and turfy calcareous shores.

Vulnerability: Cannot be assessed at present.

Astragalus fernaldi (Rydb.) H.F. Lewis Fernald's Milkvetch.

Description: Refer to Fernald (1950), p. 910.

Status: Rare.

Present Range: Eastern Quebec, Labrador, Newfoundland.

Distribution in [See Map 52]. Highlands of St. John.
Newfoundland:

Habitat: Calcareous cliffs and ledges.

Vulnerability: Cannot be assessed at present.

Hedysarum mackenzii Richards. Mackenzie's Hedysarum.

Description: Refer to Fernald (1950), p. 915.

Status: Rare.

Present Range: Arctic northwest America; south to British Columbia,
Alberta, Manitoba; Anticosti; Newfoundland.

Distribution in [See Map 53]. Cape St. George.
Newfoundland:

Habitat: Calcareous gravels and slopes.

Vulnerability: Cannot be assessed at present.

Order MYRTIFLORAE

Family ONAGRACEAE

There are eighteen species in Newfoundland. One is considered significant for this report.

Epilobium scalare Fern. Ladder Willowherb.

Description: Refer to Fernald (1950), p. 1062.

Status: Rare.

Present Range: Newfoundland.

Distribution in Newfoundland: (See Map 64). Highlands of St. John.

Habitat: Wet, slatey cliffs.

Vulnerability: Cannot be assessed at present.

Order UMBELLIFLORAE

Family UMBELLIFERAE

There are twenty-one species in Newfoundland. Two are considered significant for this report.

Hydrocotyle americana L. Water Pennywort.

- Description: Refer to Fernald (1950), p. 1088.
- Status: Rare.
- Present Range: Minnesota to Newfoundland; south to the northeastern coastal United States.
- Distribution in Newfoundland: (See Map 65). Barachois Brook.
- Habitat: Meadows, damp woods.
- Vulnerability: May be vulnerable to farming.

Osmorhiza chilensis H. & A. Chilean Sweet Cicely.

- Description: Refer to Fernald (1950), p. 1092-1093.
- Status: Rare.
- Present Range: Alaska to Newfoundland; south to California, Arizona and extreme northeastern United States.
- Distribution in Newfoundland: (See Map 66). Barr'd Harbour.
- Habitat: Woodlands and clearings.
- Vulnerability: Vulnerable to road construction.

Family CORNACEAE

There are four species in Newfoundland. One is considered significant for this report.

Cornus alternifolia L. f. Alternate-leaved Dogwood.

- Description: Refer to Fernald (1950), p. 1108.
- Status: Rare.
- Present Range: Minnesota and southern Ontario to Newfoundland; south to Missouri, Alabama, Georgia and New England.
- Distribution in Newfoundland: (See Map 67). Scattered around the Bay of Islands from North Arm to Serpentine Lake; Bishop's Falls, Hodges Hill (central Newfoundland).
- Habitat: Dry woods, rocky slopes.
- Vulnerability: Vulnerable to logging and development.

Order ERICALES

Family PYROLACEAE

There are ten species in Newfoundland. One is considered significant for this report.

Pyrola grandiflora Radius Arctic Pyrola.

- Description: Refer to Fernald (1950), p. 1112.
- Status: Rare.
- Present Range: Arctic; south to Mackenzie District in the Northwest Territories, northern Ontario, Quebec, Newfoundland.
- Distribution in Newfoundland: (See Map 68). Table Mountain (Port au Port).
- Habitat: Damp slopes and mountains.
- Vulnerability: Cannot be assessed at present.

Family ERICACEAE

There are twenty-seven species in Newfoundland. One is considered significant for this report.

Gaultheria procumbens L. Wintergreen.

- Description: Refer to Fernald (1950), p. 1126.
- Status: Rare.
- Present Range: Minnesota and Manitoba to Newfoundland; south to Wisconsin, Alabama, Georgia and New England.
- Distribution in Newfoundland: (See Map 69). Badger.
- Habitat: Sterile woods and clearings.
- Vulnerability: Vulnerable to logging and fire.

Order PRIMULALES

Family PRIMULACEAE

There are twelve species in Newfoundland. One is considered significant for this report.

Androsace septentrionalis L. Fairy Candelebra.

- Description: Refer to Fernald (1950), pp. 1138-1139.
- Status: Rare.
- Present Range: Arctic; south through the Rocky Mountains to New Mexico; south also to James Bay, Quebec, Newfoundland; Eurasia.
- Distribution in Newfoundland: (See Map 70). Bonne Bay.
- Habitat: Calcareous gravels and cliffs.
- Vulnerability: Cannot be assessed at present.

Order TUBIFLORAE

Family SCROPHULARIACEAE

There are thirty-nine species in Newfoundland. Three are considered significant for this report.

Limosella squatica L. Aquatic Mudwort.

Description: Refer to Fernald (1950), p. 1278.

Status: Rare.

Present Range: British Columbia, northern Alberta, southern Ungava District, southeastern Labrador Peninsula; south to California, Arizona, New Mexico, Minnesota, Newfoundland.

Distribution in Newfoundland: (See Map 71). Harbour Breton.

Habitat: Fresh to brackish shores and wet sands.

Vulnerability: Cannot be assessed at present.

Veronica alpina L. var. terres-novae Fernald. Alpine Speedwell.

Description: Refer to Fernald (1950), pp. 1282-1283.

Status: Rare.

Present Range: Newfoundland.

Distribution in Newfoundland: (See Map 72). Highlands of St. John.

Habitat: Alpine brooksides.

Vulnerability: Because of proximity of known population to the highway, any road construction in the area could have disastrous consequences for the species variety.

Pedicularis flammea L. Flame Lousewort.

- Description: Refer to Fernald (1950), p. 1299.
- Status: Rare.
- Present Range: Arctic; south to Quebec and Newfoundland; Eurasia.
- Distribution in Newfoundland: (See Map 73). Big Brook, Savage Cove, Halfway Brook.
- Habitat: Peaty or gravelly calcareous spots on coastal limestone barrens.
- Vulnerability: Because distribution is apparently restricted to a small coastal strip along the highway, the species is very vulnerable to road construction.

Family LENTIBULARIACEAE

There are six species in Newfoundland. One is considered significant for this report.

Utricularia purpurea Walt. Purple Bladderwort.

- Description: Refer to Fernald (1950), p. 1305.
- Status: Rare.
- Present Range: Wisconsin, southern Michigan, northern Indiana, New York, southwestern Quebec, New Brunswick, Nova Scotia, Newfoundland; south to Louisiana, Florida.
- Distribution in Newfoundland: (See Map 74). Colinet.
- Habitat: Ponds and sluggish streams.
- Vulnerability: Cannot be assessed at present.

Order RUBIALES

Family RUBIACEAE

There are thirteen species in Newfoundland. Two are considered significant for this report.

Galium brandegeei Gray Brandegee's Bedstraw.

- Description: Refer to Fernald (1950), p. 1324.
- Status: Rare.
- Present Range: Alaska to Greenland; south to California, Arizona, New Mexico, Quebec, Newfoundland; Iceland.
- Distribution in Newfoundland: (See Map 75). Mauve Bay [Noddy Bay].
- Habitat: Spring slopes and brooksides.
- Vulnerability: Cannot be assessed at present.

Mitchella repens L. Two-eyed Berry.

- Description: Refer to Fernald (1950), p. 1327.
- Status: Rare.
- Present Range: Minnesota, Ontario, southern Quebec, Newfoundland; south to Texas to Florida.
- Distribution in Newfoundland: (See Map 76). Port aux Basques, Grand Codroy River.
- Habitat: Knolls in woods.
- Vulnerability: May be vulnerable to agriculture or other land clearing.

Family COMPOSITAE

There are one hundred and forty-seven species in Newfoundland. Twelve are considered significant for this report.

Aster simplex Willd. Panicked Aster.

- Description: Refer to Fernald (1950), p. 1435.
- Status: Rare.
- Present Range: Saskatchewan to Newfoundland; south to Kansas, Missouri, Kentucky, North Carolina.
- Distribution in Newfoundland: (See Map 77). Serpentine Lake (2 locations), Crabbes River (2 locations), Osmond.
- Habitat: Damp thickets, meadows and shores.
- Vulnerability: Cannot be assessed at present.

Aster acuminatus Michx. Whorled Wood Aster.

- Description: Refer to Fernald (1950), p. 1439.
- Status: Rare.
- Present Range: Eastern Ontario to Newfoundland; south to northeastern United States and through the mountains to eastern Tennessee and Georgia.
- Distribution in Newfoundland: (See Map 78). Lark Mountain, Port aux Basques.
- Habitat: Woods and clearings.
- Vulnerability: Cannot be assessed at present.

Erigeron elatus Greene var. oligocephalus (Fern. and Wieg.) Fern.
Tall Fleabane

- Description: Refer to Fernald (1950), pp. 1446-1447.
- Status: Rare.
- Present Range: Canadian Rocky Mountains; Labrador Peninsula and Newfoundland.
- Distribution in Newfoundland: (See Map 79). Quirpon Harbour, Noddy Bay.
- Habitat: Calcareous slopes.
- Vulnerability: Vulnerable to erosion of habitat.

Antennaria appendiculata Fern. Appendaged Pussytoes.

- Description: Refer to Fernald (1950), pp. 1456-1457.
- Status: Rare.
- Present Range: James Bay region; Quebec, including Anticosti and Gaspé; Newfoundland.
- Distribution in Newfoundland: (See Map 80). Pistolet Bay.
- Habitat: Peaty or turfy calcareous soil.
- Vulnerability: Cannot be assessed at present.

Gnaphalium supinum L. Alpine Cudweed.

- Description: Refer to Fernald (1950), p. 1464.
- Status: Rare.
- Present Range: Mt. Washington (New Hampshire), Mt. Katahdin (Maine),
Tabletop Mountain (Quebec), Labrador, Newfoundland;
Greenland.
- Distribution in Newfoundland: (See Map 81). Bonne Bay.
- Habitat: Granite alpine areas.
- Vulnerability: Cannot be assessed at present.

Gnaphalium norvegicum Gunn. Norwegian Cudweed.

- Description: Refer to Fernald (1950), p. 1464.
- Status: Rare.
- Present Range: Labrador Peninsula; south to Shickshock Mountains (Quebec),
Newfoundland; Greenland.
- Distribution in Newfoundland: (See Map 82). Highlands of St. John, Sacred Island.
- Habitat: Wet or peaty slopes and alpine meadows.
- Vulnerability: Cannot be assessed at present.

Arnica plantaginifolia Pursh Plantain Arnica.

- Description: Refer to Fernald (1950), p. 1527.
- Status: Rare.
- Present Range: Ungava, Labrador, Newfoundland.
- Distribution in Newfoundland: (See Map 83). Pistolet Bay, Ha Ha Mountains, Cape St.
George.
- Habitat: Brooksidess and cool slopes.
- Vulnerability: Cannot be assessed at present.

Arnica tomentosa J. M. Macoun Hairy Arnica.

- Description: Refer to Fernald (1950), p. 1527.
- Status: Rare.
- Present Range: Alaska, Yukon, Rocky Mountains, Montana; Newfoundland.
- Distribution in Newfoundland: (See Map 84). Port au Choix, Port au Port Bay.
- Habitat: Dry calcareous gravels.
- Vulnerability: Cannot be assessed at present.

Senecio resedifolius Less. Mignonette-leaved Groundsel.

- Description: Refer to Fernald (1950), p. 1536.
- Status: Rare.
- Present Range: Alaska; Quebec, Newfoundland.
- Distribution in Newfoundland: (See Map 85). Port au Port Peninsula, Table Mountain (Port au Port), Trout River.
- Habitat: Calcareous talus slopes.
- Vulnerability: May be vulnerable to recreation and tourism.

Taraxacum phymatocarpum Vahl Tumor-fruited Dandelion.

- Description: Refer to Fernald (1950), p. 1551.
- Status: Rare.
- Present Range: Arctic; Greenland, Newfoundland.
- Distribution in Newfoundland: (See Map 86). Pistolet Bay.
- Habitat: Limestone crevices.
- Vulnerability: Cannot be assessed at present.

Taraxacum laurentianum Farn. St. Lawrence Dandelion.

- Description: Refer to Fernald (1950), p. 1551.
- Status: Rare.
- Present Range: Mingan Islands, Anticosti; Newfoundland.
- Distribution in Newfoundland: (See Map 87). Pistolet Bay, Bay of Islands.
- Habitat: Calcareous meadows, ledges and cliffs.
- Vulnerability: Cannot be assessed at present.

Crepis nana Richards. Dwarf Hawk's Beard.

- Description: Refer to Fernald (1950), p. 1559.
- Status: Rare.
- Present Range: Arctic; south very locally to mountains of Montana, and to Newfoundland.
- Distribution in Newfoundland: (See Map 88). Pistolet Bay.
- Habitat: Calcareous gravels.
- Vulnerability: Cannot be assessed present.

REFERENCES

[Plants]

- Fernald, M. L. 1950. Gray's Manual of Botany. 8th Edition. New York. 1632 pp.
- Grout, A. J. 1928-1940. Moss Flora of North America. Vol. 3.
- Nyholm, E. 1954-1969. Moss Flora of Fennoscandia. Vol. 2. Gleerup, Sweden.
- Porsild, A. E. 1957. Illustrated Flora of the Canadian Arctic Archipelago. Nat. Mus. Can. Bull. 146, 209 pp.
- Robertson, A. W., F. C. Pollett and O. A. Olsen. 1973. Peatland Flora of Newfoundland. Information Report N-X-83. Nfld. Forest Research Centre, St. John's. 442 pp.
- Rouleau, E. 1978. List of the Vascular Plants of the Province of Newfoundland. Oxen Pond Botanic Park, St. John's. 132 pp.
- Scoggan, H. J. 1978-1979. The Flora of Canada. National Museums of Canada, Ottawa. Four parts.
- Scott, P. J. and G. W. Argus. 1976. A Preliminary List of Rare Plants of Newfoundland and Labrador. (Unpublished), 9 pp.
- Smith, A. J. E. 1978. The Moss Flora of Britain and Ireland. Cambridge University Press, Great Britain. 706 pp.

FRESHWATER FISHES

A total of nineteen species of fish occur in the fresh waters of insular Newfoundland. Five are included in this report.

Information on fishes was obtained from the literature referenced, and from personal communication with W. Bruce of the Department of Fisheries and Oceans, St. John's, Newfoundland.

Order CLUPEIFORMES

Family CLUPEIDAE

There are two freshwater species in Newfoundland. One is considered significant for this report.

Alosa pseudoharengus (Wilson) Alewife.

- Description: Refer to Scott and Crossman (1973), p. 120.
- Status: Rare.
- Present Range: Florida to Newfoundland. Landlocked in some lakes in the St. Lawrence River system.
- Distribution in Newfoundland: (See Map 89). Anadromous. Newfoundland is the northern limit of range for this species. Adult specimens have been taken from the Little Codroy and Upper Humber Rivers, while young have been taken at Holyrood Pond (St. Mary's Bay) (Scott and Crossman, 1964).
- Habitat: A marine species which enters fresh water to spawn. The Holyrood Pond record indicates a possible spawning area.
- Vulnerability: In the marine environment, the young alewife are vulnerable to oil pollution. Numbers may also be reduced by the commercial fishery since the alewife is often a by-catch of such operations. The population may not be vulnerable during the time spent in fresh water.

Family SALMONIDAE

There are seven freshwater species in Newfoundland. Two are considered significant for this report.

Salmo gairdneri Richardson Rainbow Trout.

- Description:** Refer to Scott and Crossman (1973), pp. 184-185.
- Status:** Rare; introduced.
- Present Range:** Southern Alaska to southern California and northern Mexico. Introduced in all Canadian provinces from Saskatchewan to Newfoundland; in the United States, introduced into the Great Lakes region, New York and the New England States.
- Distribution in Newfoundland:** (See Map 90). First introduced into Long Pond in the St. John's area in 1887 (Scott and Crossman, 1964). Also introduced into ponds along the railway in the early 1900's (Andrews, 1965). Landlocked populations occur around St. John's, at Fox Harbour (Placentia Bay), and at Conception Harbour. Anadromous populations at Watt's Bight Brook, Daniel's Harbour, Serpentine River, Trout River and Clarenville are apparently very small. The west coast populations may be the result of early introductions, or may represent a range extension of the species in Atlantic Canada.
- Habitat:** The five areas where anadromous rainbow trout are found are all characterized by draining sedimentary limestone and shale bedrock. The pH in these waters would be relatively high (6.0 to 7.5) in comparison to most Newfoundland fresh waters which drain igneous bedrock and have pH <5.5 (Jamieson, 1974). Rainbow trout have a lower tolerance limit of pH 5.5 to 6.0 (Grand et al., 1978).
- Vulnerability:** Rainbow trout are the most acid-sensitive of salmonids. It appears that water quality may be limiting the successful reproduction of this species throughout most of insular Newfoundland (Chadwick and Bruce, 1981). They are also vulnerable to acid rain.

Coregonus clupeaformis (Mitchill) Lake Whitefish.

- Description:** Refer to Scott and Crossman (1973), p. 269.
- Status:** Rare; introduced.
- Present Range:** Widely distributed in North American fresh waters; from Alaska, the Yukon and British Columbia, across Canada and the northern United States to the Atlantic coastal watersheds.
- Distribution in Newfoundland:** (See Map 91). Fresh water. Although introduced to several ponds in the St. John's area in the late 1800's, the species has survived, in small numbers, only at Hogen's Pond. Spawning fish have been collected at Mitchell's Pond, which adjoins Hogen's Pond (Scott and Crossman, 1964).
- Habitat:** Clear water with a rocky and muddy bottom.
- Vulnerability:** Present numbers appear low, and the population is restricted to a very small water system. It is thus vulnerable to predators and sport fishing.

Order CYPRINODONTIFORMES

Family CYPRINODONTIDAE

There are two fresh water species in Newfoundland. One is considered significant for this report.

Fundulus diaphanus (Lesueur) Banded Killifish.

- Description: Refer to Scott and Crossman (1973), pp. 631-632.
- Status: Rare.
- Present Range: Yellowstone River (in eastern Montana); east through Canada in the Great Lakes Basin to the Maritime Provinces and Newfoundland; south through New York and Pennsylvania to South Carolina.
- Distribution in Newfoundland: (See Map 92). Newfoundland is the northern limit of range for this species. Restricted to small area at the head of St. George's Bay. The species has been taken at Stephenville Crossing (4 mature females with eggs, according to Scott and Crossman (1964)), Seal Cove Brook, and Noel's Pond.
- Habitat: A freshwater fish that is salt-tolerant to a degree. It has been taken in a fresh water stream having very obvious tidal influence, in association with F. heteroclitus. Also taken in brackish waters.
- Vulnerability: Cannot be assessed at present.

Order GADIFORMES

Family GADIDAE

There is one fresh water species in Newfoundland. It is considered significant for this report.

Microgadus tomcod (Walbaum) Atlantic Tomcod.

Description: Refer to Scott and Crossman (1973), p. 646.

Status: Rare (landlocked form).

Present Range: A North American marine species. Coastal and brackish waters from southern Labrador to Virginia. Occasionally a permanent resident in fresh water.

Distribution in Newfoundland: (See Map 93). Landlocked population in Deer Lake.

Habitat: No information available.

Vulnerability: Vulnerable to submerged pulpwood logs and residue which abound in Deer Lake. Some threat from sewage originating from communities around the lake.

REFERENCES

(Fishes)

- Andrews, C. W. 1965. Early Importation and Distribution of Exotic Freshwater Fish Species in Newfoundland. Newfoundland Game Fish Protection Society Ltd. 30 pp.
- Chadwick, E. M. P. and W. J. Bruce. 1981. Range Extension of Steelhead Trout (Salmo gairdneri) in Newfoundland. Naturaliste Can. 108: 301-303.
- Grande, M., I. P. Muning and S. Anderson. 1978. Relative Tolerance of some Salmonids to Acid Waters. Verh. Int. Verein. Limnol. 20: 2076-2084 (original not seen).
- Jamieson, A. 1974. A Water Quality Atlas for Streams and Lakes of Insular Newfoundland. Res. Dev. Br., Fish. Mar. Serv., St. John's, Nfld. New/D-74-4. (original not seen).
- Leim, A. H. and W. B. Scott. 1966. Fishes of the Atlantic Coast of Canada. Bull. Fish. Res. Bd. Can. #155. 485 pp.
- Scott, W. B. and E. J. Crossman. 1964. Fishes Occurring in the Freshwaters of Insular Newfoundland. Dept. Fish. Ottawa. Contr. # 58. 124 pp.
- Scott, W. B. and E. J. Crossman. 1973. Freshwater Fishes of Canada. Bull. Fish. Res. Bd. Can., 184: 966 pp.

AMPHIBIANS

Insular Newfoundland has no native amphibians. The Green Frog (Rana clamitans) was introduced to the St. John's area sometime prior to 1867. Four other species were introduced to the Corner Brook area between 1960 and 1966. Two species are included in this report.

For comprehensive information on amphibians of insular Newfoundland, see Buckle (1971) and Maunder (1983).

Order SALIENTIA

Family HYLIDAE

There is one species in Newfoundland. It is considered significant for this report.

Pseudacris triseriata triseriata (Wied) Boreal (Western) Chorus Frog.

- Description: Refer to Conant (1958), pp. 327-328.
- Status: Rare and endangered; introduced.
- Present Range: Nebraska to extreme southern parts of Quebec; south to Oklahoma and Ohio.
- Distribution in Newfoundland: (See Map 94). Presently found at Pinchgut Lake near Meadows Brook outlet. Populations at South Brook and Steady Brook appear to be extirpated. There is some doubt as to the continued success of even the Pinchgut population.
- Habitat: Inhabits marshy and swampy areas, as well as roadside pools and ditches. The species, while able to develop more rapidly in warmer waters, seems readily adaptable to cooler conditions as evidenced by a population that flourished in a cold fresh water spring at Pinchgut Lake. Chorus frogs are early breeders. Vocalization has been recorded as early as April 29 at South Brook. Calling begins when temperatures reach 13 to 20 degrees Celsius, but continues until temperatures drop as low as 8 degrees Celsius. The species can usually be heard into June.
- Vulnerability: The populations surviving appear to be very small, and seem to be confined to very restricted areas. It appears (though the evidence is somewhat circumstantial (Maunder, 1983)) that the species is endangered in Newfoundland due to apparent competition with introduced Wood Frog (Rana sylvatica) which are expanding through chorus frog range. The species may already be extirpated from the Steady Brook area as none were found in 1980. A small population at South Brook may also be gone. The population at Pinchgut Lake (where wood frogs are only now reaching) may still be hanging on, but the outlook is not good. Unless the chorus frog is transported periodically to areas where wood frogs are not found, it seems that they will be wiped out by the wood frog advance.

Family RANIDAE

There are three species in Newfoundland. One is considered significant for this report.

Rana pipiens Schreber Northern Leopard Frog.

Description: Refer to Conant (1958), pp. 344-345.

Status: Rare; introduced.

Present Range: The east slope of the mountains of western Canada and the United States; east to southern Labrador, Nova Scotia and Massachusetts; introduced to Newfoundland.

Distribution in Newfoundland: (See Map 95). Several small populations just south of Corner Brook.

Habitat: Seem to do best where water is very clear. They move very slowly through swampy or damp bushy terrain, but not through spruce woods. In Newfoundland, the species is a late breeder. Calling begins when temperatures reach 15 degrees Celsius.

Vulnerability: The leopard frogs at a site next to the highway near the junction of the Corner Brook south arterial road and the Trans Canada Highway may be vulnerable to habitat destruction if there is future road building activity. The vulnerability of the other populations cannot be assessed at present.

REFERENCES

(Amphibians)

- Buckle, J. 1971. A Recent Introduction of Frogs to Newfoundland. Canadian Field-Naturalist 85(1): 72-74.
- Conant, R. 1975. A Field Guide to Reptiles and Amphibians of Eastern and Central North America. Houghton Mifflin Co. Boston. 429 pp.
- Maunder, J. E. 1983. Amphibians of the Province of Newfoundland. Canadian Field-Naturalist 97: 33-46.

BIRDS

Approximately three hundred and eleven species of birds have occurred in Newfoundland (Maunder and Montevicchi, 1982). One hundred and forty of these species are known to have bred here (though a number of additional species are suspected of doing so). One hundred and one species (nearly 1/3 of the total) are considered of accidental or vagrant occurrence. Twenty-six species appear in this report.

Information on local distributions was obtained from the files of the Newfoundland and Labrador Nest Record Scheme, Newfoundland Museum; and from the Provincial Bird Record File, Department of Psychology, Memorial University. Habitat information was obtained mainly from Peters and Burleigh (1951), with additional information from Godfrey (1966).

Only species which are rare in terms of breeding populations are included in this report. An indication of the year-round occurrence of each species is included in the "Status" section. Distributions and map locations given are for only the breeding portions of populations that may be present in the area during the breeding season.

Order GAVIIFORMES

Family GAVIIDAE

Two species occur in Newfoundland. Both are known to have bred. One is considered significant for this report.

Gavia stellata (Pontoppidan) Red-throated Loon.

Description: Refer to Godfrey (1966), pp. 13-14.

Status: Very rare breeder; uncommon in all seasons, especially summer.

Present Range: Circumpolar. In North America breeds from northern Alaska across northern Canada to Greenland; south to coastal British Columbia, southern Mackenzie District in the Northwest Territories, James Bay and Newfoundland. Winter range extends south along the Pacific coast to Mexico, and south from Newfoundland to Florida.

Distribution in Newfoundland: (See Map 96). Single breeding record at Bell Island, Gray Islands. The species occurs in coastal waters outside the breeding season.

Nesting Habitat: Fresh water ponds and lakes; within a few metres of water.

Vulnerability: Rarity is such that almost any disturbance could eliminate the species as a breeder in the province.

Order PROCELLARIIFORMES

Family PROCELLARIIDAE

Five species occur in Newfoundland. Two are known to have bred. Both breeders are considered significant for this report.

Fulmarus glacialis (Linnaeus) Northern Fulmar.

Description: Refer to Godfrey (1966), p. 21.

Status: Rare, but increasing, new breeder (since 1973). Often year-round resident.

Present Range: Discontinuously circumpolar; breeding in the North Atlantic, North Pacific, and Arctic Oceans. Winters off both the Pacific and Atlantic coasts of North America, mostly far at sea.

Distribution in Newfoundland: (See Map 97). Small colonies of light-phase birds breed at Great Island (Tors Cove), Baccalieu Island, and Funk Island. The species is found year-round on the fishing grounds around Newfoundland.

Nesting Habitat: In colonies on sea-cliffs and rocky islands.

Vulnerability: The nesting population is vulnerable due to small numbers at present, but appears to be expanding rapidly.

Puffinus puffinus (Brünnich) Manx Shearwater.

- Description: Refer to Godfrey (1966), pp. 23-24.
- Status: Rare new breeder (since 1977). Uncommon in spring, summer and fall; not found in winter.
- Present Range: Breeds in Iceland, Faroe Islands, British Isles, the Azores, Madeira Islands, and Bermuda. A different subspecies breeds off Baja California. Ranges over the northeast Atlantic, and occurs westward less commonly to Greenland and North America.
- Distribution in Newfoundland: (See Map 98). Small colony at Middle Lawn Island. Uncommon offshore; not found in winter.
- Nesting Habitat: Breeds in colony, on grassy island with thick peaty turf; in association with Leach's Storm-petrels.
- Vulnerability: Small breeding numbers and restricted breeding distribution make the nesting population vulnerable to many kinds of disturbance such as gill netting and oil pollution. The colony is also vulnerable to grazing sheep sometimes kept on the island.

Order PELECANIFORMES

Family PHALACROCORACIDAE

Two species occur in Newfoundland. Both are known to have bred. Both are considered significant for this report.

Phalacrocorax carbo (Linnaeus) Great Cormorant.

Description: Refer to Godfrey (1966), pp. 31-32.

Status: Uncommon breeder and year-round resident.

Present Range: Breeds in Europe, Asia, Africa, Australia, southern Greenland, and the southern Atlantic coast of Canada. In eastern Canadian waters, the species winters south from Newfoundland and the Gulf of St. Lawrence.

Distribution in Newfoundland: (See Map 99). Small numbers breed at Guernsey Island, Coal River Head, Cape Cormorant, Cape Anguille, and Island Head (near Cape St. Mary's). The species occurs in small numbers along the south coast in winter.

Nesting Habitat: In colonies on isolated cliffs or rocky islands along the coast.

Vulnerability: Small breeding numbers make the nesting population vulnerable to many disturbances. The Great Cormorant is not protected under the Migratory Birds Convention Act.

Phalacrocorax auritus (Lesson) Double-crested Cormorant.

- Description:** Refer to Godfrey (1966), p. 32.
- Status:** Rare breeder. Uncommon in all seasons, especially winter.
- Present Range:** Breeds from southwest Alaska, central Alberta, James Bay, and Newfoundland; south to Mexico and the Bahamas. Winters from southern breeding limits to the Gulf of Mexico.
- Distribution in Newfoundland:** (See Map 100). Small colonies can be found at Gull Pond (Badger), Cape Ballard, Island Head (near Cape St. Mary's), and between Great Barasway and Seal Point (south of Placentia). In addition, there appear to be a small number of small colonies on ponds on the east coast. The species occurs in coastal waters in spring, summer and fall.
- Nesting Habitat:** Nests in colonies on inland ponds or rocky coastal islands and cliffs.
- Vulnerability:** Though formerly more widespread, the breeding population is now quite limited. The species is not protected under the Migratory Birds Convention Act, and is sometimes persecuted by fishermen in the belief that it feeds on commercial fish and thus is unwanted competition.

Order ANSERIFORMES

Family ANATIDAE

Thirty-five species occur in Newfoundland. Fourteen species are known to have bred. Five of the breeders are considered significant for this report.

Anas americana Gmelin American Wigeon.

Description: Refer to Godfrey (1966), p. 63.

Status: Rare breeder. Very uncommon in all seasons.

Present Range: Breeds mainly from Alaska to Hudson Bay; south to California, Colorado and Nebraska. Winters from southern Alaska and southern New England; south to Central America and the West Indies.

Distribution in Newfoundland: (See Map 101). Two broods were recorded at Grand Codroy River Delta in 1979.

Nesting Habitat: Freshwater sloughs, ponds and marshy lake borders.

Vulnerability: Breeding population is so small that almost any disturbance might eliminate the species as a breeder in Newfoundland.

Aythya marila (Linnaeus) Greater Scaup.

- Description: Refer to Godfrey (1966), p. 68.
- Status: Uncommon breeder and year-round resident.
- Present Range: Holarctic. Breeds in Iceland, Europe, Alaska, Yukon, northern British Columbia, Manitoba, Quebec and Newfoundland. In North America, winters on the Pacific coast, the Atlantic coast, and on Lakes Erie and Ontario.
- Distribution in Newfoundland: (See Map 102). Recorded breeding at Cappahayden, Frenchman's Cove (Burin Peninsula), a pond northeast of Stephenville, and at three ponds near L'Anse au Meadows. In winter, the species occurs in salt water bays and large freshwater lakes.
- Nesting Habitat: Near shores of lakes, ponds, and sluggish rivers.
- Vulnerability: Small numbers make the breeding population vulnerable to many disturbances, especially hunters.

Histrionicus histrionicus (Linnaeus) Harlequin Duck.

- Description: Refer to Godfrey (1966), p. 73.
- Status: Rare breeder. Very uncommon in all seasons, especially summer.
- Present Range: Breeds in eastern Siberia, Alaska, and the Yukon; south to California and Colorado. Breeds also from Greenland and Iceland, south to Newfoundland. Winters from breeding range south to Korea, Japan, California and Massachusetts.
- Distribution in Newfoundland: (See Map 103). Recorded breeding at Western Brook and below Gros Morne Mountain (both in Gros Morne National Park). The species occurs along the coast and on islands in fall and winter.
- Nesting Habitat: In breeding season, swift rivers and streams. Nests are placed near water in hollow stumps, bushes, or recesses in rocks.
- Vulnerability: Because of small numbers, the known breeding population is very vulnerable to many disturbances. However, their location in the National Park may provide them with adequate protection from most disturbance.

Somateria mollissima (Linnaeus) Common Eider.

- Description:** Refer to Godfrey (1966), p. 75.
- Status:** Widespread breeder, but in greatly reduced numbers in recent years. Resident year-round, but more common outside breeding season.
- Present Range:** Holarctic. In North America, breeds from the Arctic south coastally to Kodiak Island and Maine. Winters somewhat farther south.
- Distribution in Newfoundland:** (See Map 104). Small colonies or single nests have been recorded at Hare Bay (Brent Island, Apron Island, Hooper's Island, Nance's Island, Spring Island, Grassy Rock Island, Gilliat Island, Demetre Island); St. John Bay (James Island, Whale Island, Twin Island); First Easter Pond (near Raleigh); Duck Pond (near L'Anse au Meadows); St. Brendan's; Duck Island, Woody Island, Wreck Island, Penguin Island, Pass Island, and a small island just northwest of Pass Island (all on the south coast). Some of these sites may now be abandoned. The species winters in large numbers along the coast.
- Nesting Habitat:** Low islands, on salt water or lakes near the coast.
- Vulnerability:** The breeding population is vulnerable to poaching and other human disturbance, factors at least partially responsible for the noted population decline.

Melanitta nigra (Linnaeus) Black Scoter.

- Description: Refer to Godfrey (1966), p. 80.
- Status: Rare breeder. Uncommon in most seasons, though may be seen in large numbers in winter.
- Present Range: Circumpolar. Breeds in Alaska and northern Canada; also Iceland, Europe and Asia. In North America, winters from the Aleutian Islands to California and from Newfoundland to South Carolina, with small numbers on the Great Lakes.
- Distribution in Newfoundland: (See Map 105). Newfoundland is one of the few places in Canada where definite breeding records exist for this species. Recorded breeding at Mizzen Topsail, near Grand Lake, in the interior of the Avalon Peninsula, and near Cape Broyle. Common along the coast in winter. Rarely comes to land except to nest.
- Nesting Habitat: Marshes near fresh or salt water. Nest on ground, under bushes or in long grass.
- Vulnerability: Small numbers make the breeding population vulnerable to many disturbances.

Order FALCONIFORMES

Family ACCIPITRIDAE

Nine species occur in Newfoundland. Four species are known to have bred. Three of the breeders are considered significant for this report.

Accipiter gentilis (Linnaeus) Northern Goshawk.

Description: Refer to Godfrey (1966), p. 86.

Status: Rare breeder. Very uncommon in all seasons, especially summer.

Present Range: Breeds from the forested parts of Canada; south to Mexico, Colorado, and Minnesota. Also breeds in Europe and Asia. Winters further south.

Distribution in Newfoundland: (See Map 106). Nests recorded at Fox Island River and Lake Ambrose. Occurs uncommonly in forests and woodlands in winter.

Nesting Habitat: Coniferous and deciduous woods.

Vulnerability: The small breeding population is vulnerable to human pressures. Often killed as vermin.

Accipiter striatus Vieillot Sharp-shinned Hawk.

- Description: Refer to Godfrey (1966), p. 87.
- Status: Rare breeder. Uncommon in all seasons, especially spring and summer.
- Present Range: Breeds throughout most of Canada and the United States. Winters from southern Canada (including Newfoundland) to Central America.
- Distribution in Newfoundland: (See Map 107). Single breeding record near Red Indian Lake. Occurs sparingly throughout the island in fall and winter.
- Nesting Habitat: Coniferous trees near a clearing or path.
- Vulnerability: Small breeding population is vulnerable to human pressures. Often killed as vermin, or simply for target practice.

Buteo lagopus (Pontoppidan) Rough-legged Hawk.

- Description: Refer to Godfrey (1966), pp. 93-94.
- Status: Rare breeder. Very uncommon in all seasons, especially winter.
- Present Range: Panboreal. In North America, breeds chiefly on Arctic islands, and in northern Canada; south to the Gulf of St. Lawrence. In winter, North American birds move south to southern Canada and the northern United States; occasionally reaching the southern United States.
- Distribution in Newfoundland: (See Map 108). Recorded breeding at Partridgeberry Hills, Butterpot Provincial Park, near Red Head Cove, and on Great Sacred Island. Occurs very sparingly in winter.
- Nesting Habitat: Rocky outcrops, cliff ledges or low trees.
- Vulnerability: The small breeding population is vulnerable to hunters and farmers who shoot them in the belief that they harm poultry or game birds.

Order GALLIFORMES

Family TETRAONIDAE

Four species occur in Newfoundland. All are resident breeders. The two species of grouse were introduced. One species of ptarmigan is considered significant for this report.

Lagopus mutus (Montin) Rock Ptarmigan.

Description: Refer to Godfrey (1966), p. 111.

Status: Very uncommon breeder and year-round resident.

Present Range: Circumpolar. Occurs in Europe and Asia; and from the Arctic Islands south to southern Alaska, northern Canada, and southern Greenland. Winters mainly within the breeding range, and a little farther south.

Distribution in Newfoundland: (See Map 109). Small numbers breed at Rocky Pond on the southwest coast, and on Gros Morne Mountain. Apparently also breeds on the mountains of the Long Range. May move to lower altitudes in winter.

Nesting Habitat: Arctic and alpine highlands. In breeding season, generally prefers higher, drier and barer country than Willow Ptarmigan.

Vulnerability: Due to scattered occurrence and inaccessible habitat, the small breeding population is not particularly vulnerable.

Family PHASIANIDAE

One species occurs in Newfoundland. It is a resident breeder and an introduction.

Phasianus colchicus Linnaeus Ring-necked Pheasant.

- Description: Refer to Godfrey (1966), pp. 116-117.
- Status: Very rare; introduced. May eventually disappear.
- Present Range: Native to Asia. Introduced and widely established in Europe, New Zealand, and North America. Locally distributed across southern Canada and in the United States.
- Distribution in Newfoundland: (See Map 110). Recorded breeding at one locality near Portugal Cove.
- Nesting Habitat: Near human habitation.
- Vulnerability: Small numbers makes this breeding population vulnerable to many disturbances, especially hunting.

Order GRUIFORMES

Family RALLIDAE

Nine species occur in Newfoundland. Two species are known to have bred. Both breeding species are considered significant for this report.

Rallus limicola Vieillot Virginia Rail.

- Description: Refer to Godfrey (1966), p. 122.
- Status: Apparently rare breeder. Rare in all seasons.
- Present Range: Breeds from southern Canada, south locally to southern South America. Winters mainly from southern United States southward.
- Distribution in Newfoundland: (See Map 111). Recorded breeding at Doyles and Heart Island (both in Grand Codroy Valley). Usually not present in winter.
- Nesting Habitat: Nests in freshwater marshes; usually well-concealed.
- Vulnerability: The small breeding population is probably limited by lack of suitable nesting habitat, and is vulnerable to disturbances of these sites.

Porzana carolina (Linnaeus) Sora.

- Description: Refer to Godfrey (1966), p. 123.
- Status: Rare breeder. Very uncommon in all seasons.
- Present Range: Breeds from Canada to central United States. Winters from southern United States to central South America.
- Distribution in Newfoundland: (See Map 112). Recorded breeding at Heart Island (Grand Codroy River). May also breed at Long Pond in St. John's, but this requires confirmation. Usually not present in winter.
- Nesting Habitat: Freshwater or brackish marshes; nests well-hidden.
- Vulnerability: Population may be limited by lack of suitable nesting habitat.

Order CHARADRIIFORMES

Family CHARADRIIDAE

Nine species occur in Newfoundland. Three species are known to have bred. Two of the breeders are considered significant for this report.

Charadrius melodus Ord Piping Plover.

- Description: Refer to Godfrey (1966), pp. 132-133.
- Status: Rare breeder; threatened. Found in very small numbers in spring and summer.
- Present Range: Breeds from southern Canada; south to Nebraska, the southern shores of Lakes Michigan and Erie, and Virginia. Winters from South Carolina to Florida, and westward to Mexico. The species is very uncommon, and may be threatened over its entire range.
- Distribution in Newfoundland: (See Map 113). Recorded breeding at Little Codroy River, Grand Codroy River, Stephenville Crossing, Deadman's Bay, and Lumsden Beach.
- Nesting Habitat: Above the high water mark on wide sandy beaches.
- Vulnerability: This rare species is limited by lack of suitable nesting habitat, and is vulnerable to human disturbance at these sites.

Charadrius vociferus Linnaeus Killdeer.

- Description: Refer to Godfrey (1966), pp. 133-134.
- Status: Rare breeder. Very uncommon in all seasons.
- Present Range: Breeds from southern Canada; south to Mexico, the Gulf Coast of the United States, and the West Indies; also in Peru. Winters from northern United States; south to South America.
- Distribution in Newfoundland: (See Map 114). Recorded breeding at Grand Codroy River, Stephenville Crossing, and St. Paul's Bay. Usually absent in winter.
- Nesting Habitat: Open fields, meadows, gravelly ground.
- Vulnerability: Vulnerable because of small size of breeding population.

Order CHARADRIIFORMES

Family SCOLOPACIDAE

Twenty-seven species occur in Newfoundland. Five species are known to have bred. One breeder is considered significant for this report.

Scolopax minor Gmelin American Woodcock.

Description: Refer to Godfrey (1966), p. 140.

Status: Rare breeder. Rare in all seasons, especially fall and winter.

Present Range: Breeds from southeastern Canada; south to Texas, Alabama, Mississippi, Louisiana, and Florida. Winters mainly in Arkansas, Louisiana, and Mississippi.

Distribution in Newfoundland: (See Map 115). Recorded breeding at Back River (Salmonier), and Mummichog Provincial Park.

Nesting Habitat: On ground, usually in damp woods.

Vulnerability: Small numbers make this breeding population vulnerable.

Family LARIDAE

Twenty-two species occur in Newfoundland. Eight species are known to have bred. Two of the breeders are considered significant for this report.

Larus ridibundus Linnaeus Common Black-headed Gull.

- Description: Refer to Godfrey (1966), p. 182.
- Status: Rare new breeder. Will probably increase.
- Present Range: Breeds in Iceland, the Faroes, and across Eurasia to Kamchatka; now also in Newfoundland. Small numbers winter in Newfoundland, Nova Scotia and New Brunswick.
- Distribution in Newfoundland: (See Map 116). Two to three pairs have been recorded breeding at Stephanville Crossing. There is suspicion of a colony in Notre Dame Bay as well. Small numbers occur around the coast in winter, particularly in the vicinity of St. John's.
- Nesting Habitat: In colonies on the coast or inland.
- Vulnerability: Cannot be assessed at present.

Sterna caspia Pallas Caspian Tern.

- Description: Refer to Godfrey (1966), p. 193.
- Status: Rare breeder. Uncommon in spring, summer and fall; absent in winter.
- Present Range: Breeds locally from Canada to the southern United States. Also found in Europe, Asia, Africa, Australia and New Zealand. In the Western Hemisphere, it winters from southern United States to Mexico and the West Indies.
- Distribution in Newfoundland: (See Map 117). Small colonies occur at Devil's Brook Island and at Frenchman's Cove (both on the Burin Peninsula). Other small colonies are expected to be found eventually.
- Nesting Habitat: Colonies on sandy or gravelly points or islands.
- Vulnerability: Cannot be assessed at present.

Family ALCIDAE

Six species occur in Newfoundland. Five species are known to have bred. One of the breeders is considered significant for this report.

Uria lomvia (Linnaeus) Thick-billed Murre.

- Description: Refer to Godfrey (1966), p. 197.
- Status: Rare breeder; common in winter and early spring.
- Present Range: Breeds on arctic islands. In North America, its range extends south to the Gulf of St. Lawrence and southern Greenland. Wintering is in offshore waters within the breeding range, and southward commonly to the Grand Banks.
- Distribution in Newfoundland: (See Map 118). Small numbers breed at Baccalieu Island, Funk Island, and Green Island (Witless Bay). Common around coast in winter.
- Nesting Habitat: In colonies on rocky sea islands or cliffs, in association with Common Murre (Uria aalge).
- Vulnerability: The small breeding population is vulnerable to oil pollution, accidental capture in fishing nets, and human disturbance.

Order APODIFORMES

Family TROCHILIDAE

One species occurs, and has bred, in Newfoundland. It is considered significant for this report.

Archilochus colubris (Linnaeus) Ruby-throated Hummingbird.

- Description: Refer to Godfrey (1966), p. 230.
- Status: Rare breeder. Found rarely in spring, summer and fall, but not winter.
- Present Range: Breeds from southern Canada to the Gulf of Mexico. Winters from Texas and Florida to Central America.
- Distribution in Newfoundland: (See Map 119). Single breeding record for St. John's.
- Nesting Habitat: Gardens.
- Vulnerability: Cannot be assessed at present.

Order PASSERIFORMES

Family MIMIDAE

Three species occur in Newfoundland. One is known to have bred, and is considered significant for this report.

Mimus polyglottos (Linnaeus) Northern Mockingbird.

Description: Refer to Godfrey (1966), p. 292.

Status: Very uncommon breeder and year-round resident.

Present Range: Resident from northern United States and parts of southern Canada (very locally), south to Mexico, Jamaica, and the Virgin Islands.

Distribution in Newfoundland: (See Map 120). Recorded breeding at St. John's.

Nesting Habitat: No information available.

Vulnerability: Cannot be assessed at present.

Family ICTERIDAE

Eight species occur in Newfoundland. Five are known to have bred. One of the breeders is considered significant for this report.

Quiscalus quiscula (Linnaeus) Common Grackle.

- Description: Refer to Godfrey (1966), pp. 359-360.
- Status: Uncommon breeder. Has been recorded here in all seasons.
- Present Range: Breeds from Alberta to Newfoundland; south to Colorado, Texas and the United States Gulf Coast. Winters from New York to Texas.
- Distribution in Newfoundland: (See Map 121). Recorded breeding at Tompkins and Cappahayden.
- Nesting Habitat: In conifers or swampy woods.
- Vulnerability: Cannot be assessed at present.

REFERENCES

(Birds)

- Godfrey, W. E. 1966. The Birds of Canada. National Museums of Canada. Bulletin 203. 428 pp.
- Lamberton, R. D. 1976. An Avifaunal Survey of L'Anse-aux-Meadows National Historic Park. Parks Canada. Contract No. ARD-75-31. 163 pp.
- Maunder, J. E. and W. A. Montevecchi. 1982. Field Checklist of the Birds of Insular Newfoundland. Newfoundland Natural History Society, St. John's.
- Peters, H. S. and T. D. Burleigh. 1951. The Birds of Newfoundland. Province of Newfoundland, St. John's. 431 pp.

LAND MAMMALS

Twenty-seven species of land mammal have been recorded for Newfoundland. Thirteen are native; the others have either been introduced, or have occurred as vagrants. Seven species are considered significant for this report.

Little information was available on some of the species, especially those that have been introduced.

Order CHIROPTERA

Family VESPERTILIONIDAE

Two species occur in Newfoundland. One is considered significant for this report.

Myotis keenii (Merriam) Keen's Bat.

Description: Refer to Banfield (1974), p. 45.

Status: Rare.

Present Range: Has a disjunct distribution. An eastern population occurs across central North America as far as Saskatchewan; a western population is confined to the Pacific coast, from southern Alaska to Washington. In Canada, the species occurs from Newfoundland to Saskatchewan, and on the coast of British Columbia.

Distribution in Newfoundland: (See Map 122). Exact distribution is unknown, but the collection locations for the six known specimens are confined to the southwest corner of the Island: Doyles, Lewis Hills, Romaines Brook, and Spruce Brook (Cameron, 1958).

Habitat: Of the two specimens collected from Newfoundland by the National Museums of Canada, one was captured in a shed, and the other was shot while flying low along the ground in an open hayfield (Cameron, 1958). According to Banfield (1974), this bat roosts during summer days in sheltered places. In winter it hibernates in caves or buildings with high humidity and a temperature of about 4 degrees Celsius.

Vulnerability: Little study has been done on bats in Newfoundland. Lack of suitable hibernating sites may be a factor in maintaining populations at low levels (Northcott, 1974). Human disturbance at hibernation sites could pose a threat.

Order LAGOMORPHA

Family LEPORIDAE

Two species occur in Newfoundland. One is considered significant for this report.

Lepus arcticus Ross Arctic Hare.

Description: Refer to Banfield (1974), pp. 85-86.

Status: Rare.

Present Range: Inhabits the tundra regions of Canada from Newfoundland and Labrador to the Mackenzie Delta region in the Northwest Territories. Also occurs in the Canadian Arctic Islands, Alaska, and Greenland.

Distribution in Newfoundland: (See Map 123). The Arctic Hare reaches the southern limit of its North American distribution in Newfoundland. It is presently distributed throughout most of the mountains and southern coastal areas of Newfoundland. Densities in all areas are extremely low (Mercer et al., 1979). Unconfirmed reports of a population north of Fortune Bay also exist (Bergerud, 1967). Transplants to Brunette Island and the Grey Islands have resulted in high or moderate densities there, while transplants to the Avalon Peninsula, the Burin Peninsula, and the Pool's Cove area have either failed, or produced populations with very low levels (Mercer et al., 1979).

Habitat: Native Arctic Hare populations occur only in arctic-alpine or exposed coastal barren ecoregions. Forested areas on the edge of barrens are often used for escape, cover and winter feeding (Mercer, 1969).

The reproduction of this native hare in Newfoundland seems to be unique in that it may produce two or three litters per year (Northcott, 1974). Throughout most of its range elsewhere, the species usually produces one litter per year.

Vulnerability: The Arctic Hare's limited density and distribution are due to food preference and availability, natural and human predation, and snow conditions.

The existing population is vulnerable to predation by man, and this may have been the cause of extermination of the hares from some areas (Mercer, 1969). While much of the present range of the species is not readily accessible, development and construction of roads could open new areas to hunters and trappers.

In Gros Morne National Park, logging of mature spruce areas along the eastern park boundary could result in tree regeneration which would attract Snowshoe Hare and the associated predators, thus subjecting the Park's Arctic Hare population to heavy lynx predation. Also, high densities of moose, which are under complete protection in the park, could lead to overbrowsing of birch at the tree line where Arctic Hare come to browse, thus further reducing the hare's range in the park (Wood and Hope, 1972).

Order RODENTIA

Family SCIURIDAE

Two species occur in Newfoundland. One is considered significant for this report.

Tamias striatus (Linnaeus) Eastern Chipmunk.

Description: Refer to Banfield (1974), p. 96.

Status: Rare; introduced.

Present Range: Eastern North America from the United States bordering the Gulf of Mexico, to the southern tip of James Bay. In Canada, distribution is fairly restricted. The species occurs in the southern portions of Ontario and Quebec, the Maritimes, and now Newfoundland.

Distribution in Newfoundland: (See Map 124). Successful introductions have taken place at Barachois Pond and Butterpot Provincial Parks. In 1962, thirty individuals were released in Barachois Pond Park; and in 1968, nineteen were released in Butterpot Park (Northcott et al., 1974).

A good population exists at Barachois Pond Park, and dispersal has occurred for about forty miles in a southerly direction, twenty miles in an easterly direction, and ten to fifteen miles in northerly and westerly directions. The Butterpot Park population is small and mostly confined to the park due to the non-availability of suitable habitat in the vicinity (Northcott et al., 1974). John Maunder (personal communication) reports a small population at a recreational park on the Holyrood access road, not far from Butterpot Park.

Habitat: Hardwood stands which provide ground litter, blowdowns, and open areas (Northcott et al., 1974). Rock piles, old buildings and dumps are also utilized.

Vulnerability: Since the chipmunks exist in and around provincial parks, they are probably not particularly vulnerable. However, population size and dispersal are probably limited by lack of suitable habitat.

Family MURIDAE

Seven species occur in Newfoundland. Three are considered significant for this report.

Peromyscus maniculatus (Wagner) Deer Mouse.

Description: Refer to Banfield (1974), pp. 164-165.

Status: Rare.

Present Range: Occurs from the treeline in North America; south to the Mexican plateau.

Distribution in Newfoundland: (See Map 125). This species was originally considered to be of accidental occurrence; and was not known to breed. It seems possible, however, that a small population has established itself in the southwest corner of the Island. In 1968, one specimen was taken at a hunting camp near the headwaters of Broom's Brook in the Anguille Mountains at a point 10.7 km east and 4.6 km south of Cape John. (Gould and Pruitt, 1969).

Four other specimen's were collected in a woods camp at Southwest Brook in 1981. This site is approximately 100 miles northeast of the 1968 capture site (M. Bateman, personal communication).

Habitat: All specimens were obtained from woods camps. The collection site at Broom's Brook was at an altitude of 360 metres in a broad bank of spruce-fir forest bordered by mature boreal forest to the south and alpine tundra to the north (Gould and Pruitt, 1969). The woods camp at Southwest Brook, where the other four specimens were collected, was in an area of balsam fir forest which had been cut over approximately ten to fifteen years previously (M. Bateman, personal communication).

Vulnerability: Cannot be assessed at present.

Clethrionomys gapperi (Vigors) Gapper's Red-backed Vole.

- Description: Refer to Banfield (1974), p. 180.
- Status: Rare; introduced.
- Present Range: Across northern North America, from Labrador to British Columbia; and from the Great Slave Lake region, south to the Great Smokey Mountains in the east and the southern Rocky Mountains in the west.
- Distribution in Newfoundland: (See Map 126). A small number of individuals were introduced to Camel and Yellow Fox Islands in Notre Dame Bay in 1967. One specimen was trapped on Yellow Fox Island in 1979 (O. Forsey, personal communication). The actual extent of survival and dispersal is unknown.
- Habitat: Information for Newfoundland is unavailable.
- Vulnerability: Cannot be assessed at present.

Clethrionomys glareolus Tilesius Bank Vole.

- Description: Refer to Walker (1975), p. 834.
- Status: Rare (possibly no longer existing); introduced.
- Present Range: Great Britain through Europe, Asia, and Asia Minor to Japan.
- Distribution in Newfoundland: (See Map 127). Small numbers were experimentally introduced to Yellow Fox Island in Notre Dame Bay in 1967 (O. Forsey, personal communication). Present situation unknown.
- Habitat: Information for Newfoundland is unavailable.
- Vulnerability: Cannot be assessed at present.

Order CARNIVORA

Family MUSTELLIDAE

Four species occur in Newfoundland. One is considered significant for this report.

Martes americana (Turton) Pine Marten.

Description: Refer to Banfield (1974), pp. 315-316.

Status: Rare and threatened.

Present Range: Found in suitable habitat across the northern half of North America. In the Atlantic Provinces, the species is restricted to northern New Brunswick and Labrador with a few pockets still occurring in Cape Breton and Newfoundland (M. Bateman, 1981).

Distribution in Newfoundland: (See Map 128). Once found throughout most of the Island, except for the Avalon and Bonavista Peninsulas, and the northern part of the Great Northern Peninsula (Bergerud, 1981). The core of the present population is restricted to the Grand Lake-Little Grand Lake-Southwest Brook area. Sightings and accidental trappings have extended the known-range of this population north on the west side of Grand Lake as far as the Bay of Islands, west to Stephenville and northeast to Sandy Lake (Skinner, 1979). Other isolated pockets may exist in central to eastern portions of the Island (Skinner, 1979), but there are no confirmations of such populations. Present studies are trying to determine the actual extent of distribution.

Marten trapped at Southwest Brook and Grand Lake have been introduced to Lapoile River, Main River, and recently to Terra Nova National Park. The status of these introductions is under investigation by wildlife personnel.

Habitat: The west coast population is found in virgin coniferous and mixed forest containing occasional White Pine (Skinner, 1979). Windfall areas are used extensively for hunting.

It seems that the home-range size of the Newfoundland marten may be larger than that of its mainland North America counterparts (Bateman, 1981).

Vulnerability:

The population decline from former years has been due to heavy trapping and disturbances to the environment by industry and human settlement. In 1934, it was placed on the protected list, but has failed to respond to total protection. Numbers remain low. In 1973, a marten reserve was established to further ensure protection for the west coast population.

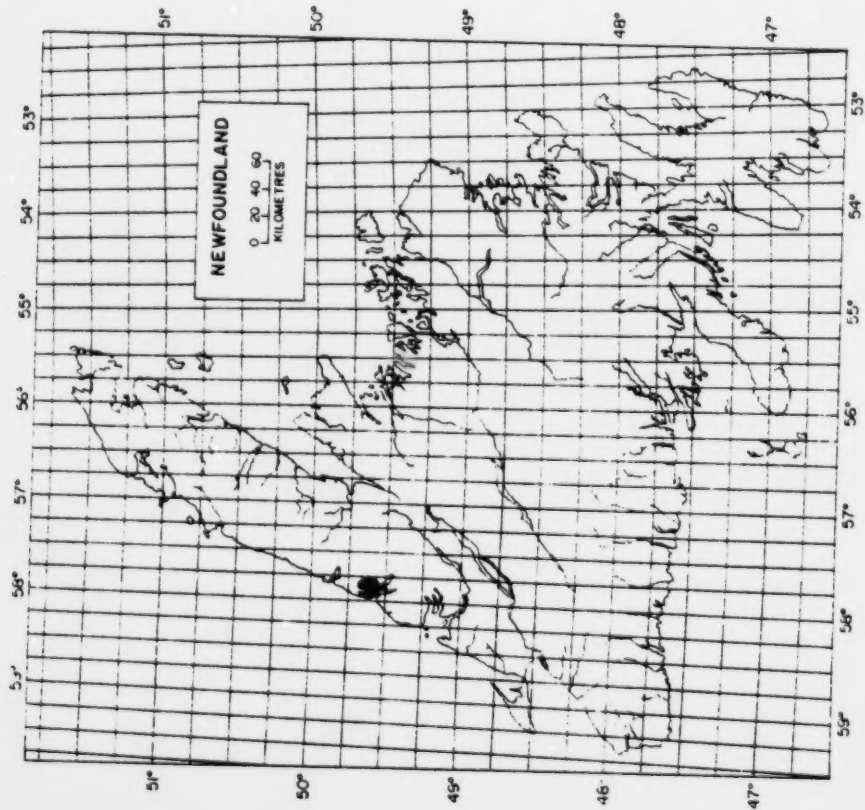
The present population is threatened by logging operations which eliminate some requirements such as food and denning sites. Just as damaging is the increased human activity that follows logging, because of new and easy access available to hunters, rabbit catchers, trappers and those out merely for recreation on all-terrain vehicles. Because of the marten's natural curiosity and lack of fear of human scent, they are extremely easy to trap, and there is a high incidence of accidental trapping. Since the reproductive potential of the marten is very low, exploitation may not have to be very high to cause a decline and disappearance (Skinner, 1979). Although clear-cutting should not be allowed in areas where marten are rare, it seems that forest management that leaves some areas of mature coniferous stands at all times may be able to provide adequate habitat in such areas. Indeed, some timber cutting may improve marten habitat by encouraging brush growth for small mammals (Marshall, 1951).

Forest fires and insect infestations may also destroy habitat.

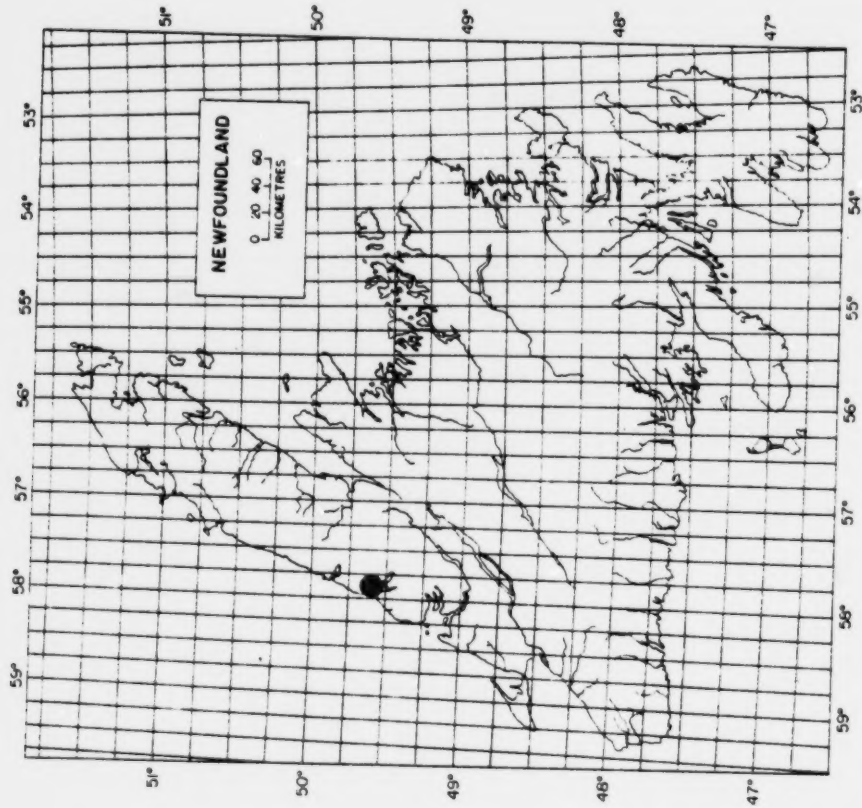
REFERENCES

(Land Mammals)

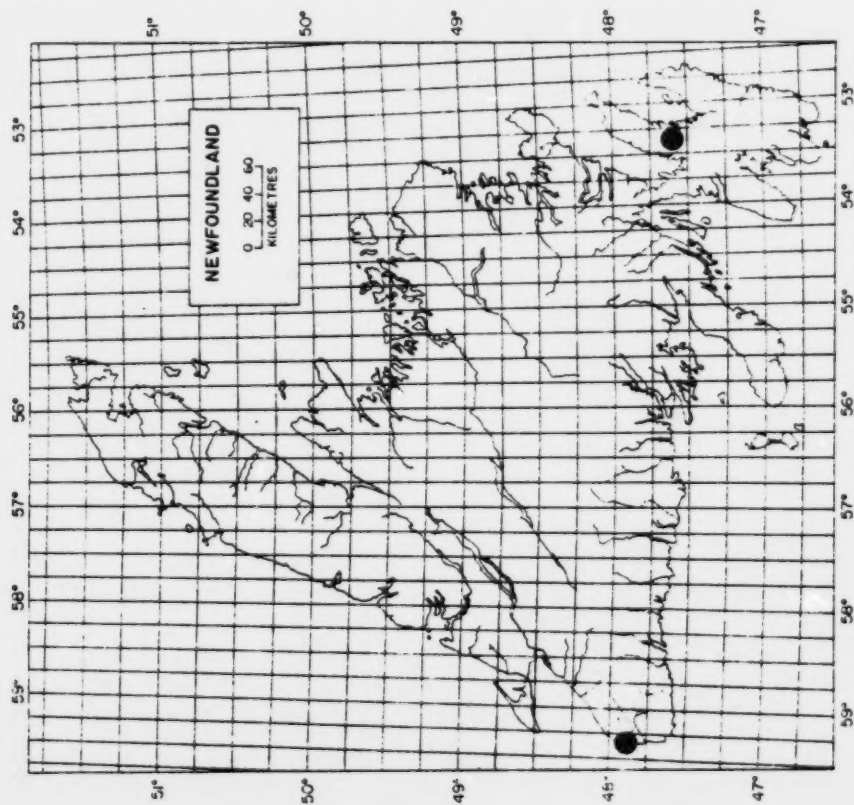
- Benfield, A. W. F. 1974. Mammals of Canada. National Museums of Canada. University of Toronto Press. xxv + 438 pp.
- Bateman, M. C. 1981. Progress Report. Marten Program-Feasibility Phase. Canadian Wildlife Service Report for Parke Canada. 31 pp.
- Bergerud, A. T. 1967. Distribution and Abundance of Arctic Hares in Newfoundland. Canadian Field-Naturalist 81(4): 242-248.
- Bergerud, A. T. 1969. The Status of the Pine Marten in Newfoundland. Canadian Field-Naturalist 83(2): 128-131.
- Cameron, A. W. 1958. The Mammals of Newfoundland. IN: Mammals of the Islands in the Gulf of St. Lawrence. National Museum of Canada Bulletin 154: 71-106.
- Gould, W. P. and W. O. Pruitt, Jr. 1969. First Newfoundland Record of Peromyscus. Canadian Journal of Zoology 47: 469.
- Northcott, T. H. 1974. The Land Mammals of Insular Newfoundland. Newfoundland Wildlife Division, St. John's. 90 pp.
- Northcott, T. H., W. E. Mercer and E. Menchenton. 1974. The Eastern Chipmunk, Tamias striatus, in Insular Newfoundland. Canadian Field-Naturalist 88(1): 86.
- Marshall, W. H. 1951. Pine Marten as a Forest Product. Journal of Forestry 49(2): 899-905.
- Mercer, W. E. 1969. The Arctic Hare in Insular Newfoundland. Newfoundland Wildlife Division, St. John's. 7 pp.
- Mercer, W. E., B. J. Heern and C. Finlay. 1979. Arctic Hare Populations in Insular Newfoundland. Paper delivered at the International Lagomorph Conference at Guelph University. Guelph, Ontario. 22 pp.
- Skinner, W. R. 1979. Status of the Pine Marten (Martes americana atrata) on the Island of Newfoundland. Newfoundland Wildlife Division Report for the Committee on the Status of Endangered Wildlife in Canada. 9 pp.
- Walker, E. P. 1975. Mammals of the World. Third edition, volume 2. Johns Hopkins University Press, Baltimore and London. 854 pp.
- Wood, T. J. and P. Hope. 1972. Preliminary Investigations of the Status of the Arctic Hare in Gros Morne National Park, Newfoundland. Newfoundland Wildlife Division, St. John's. 12 pp.



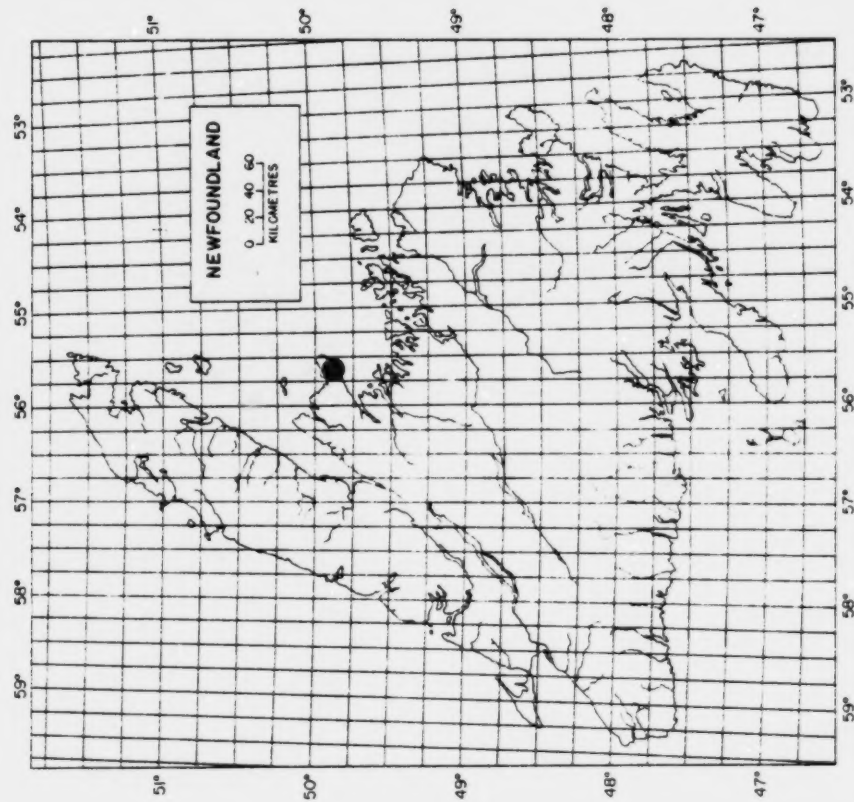
MAP 1: Andreaea blyttii



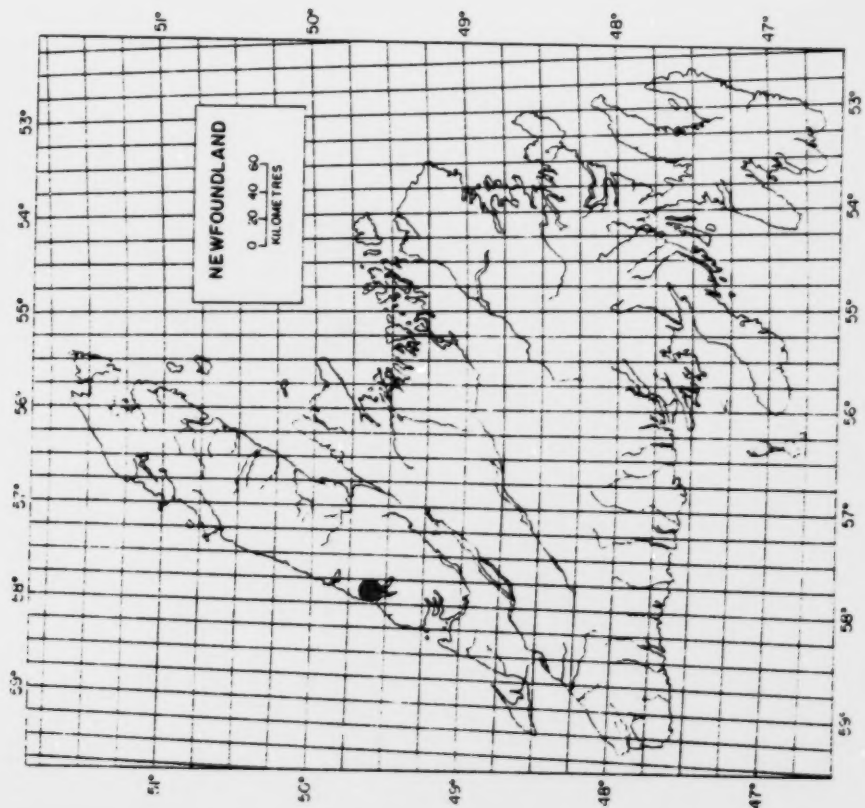
MAP 2: Andreaea nivalis



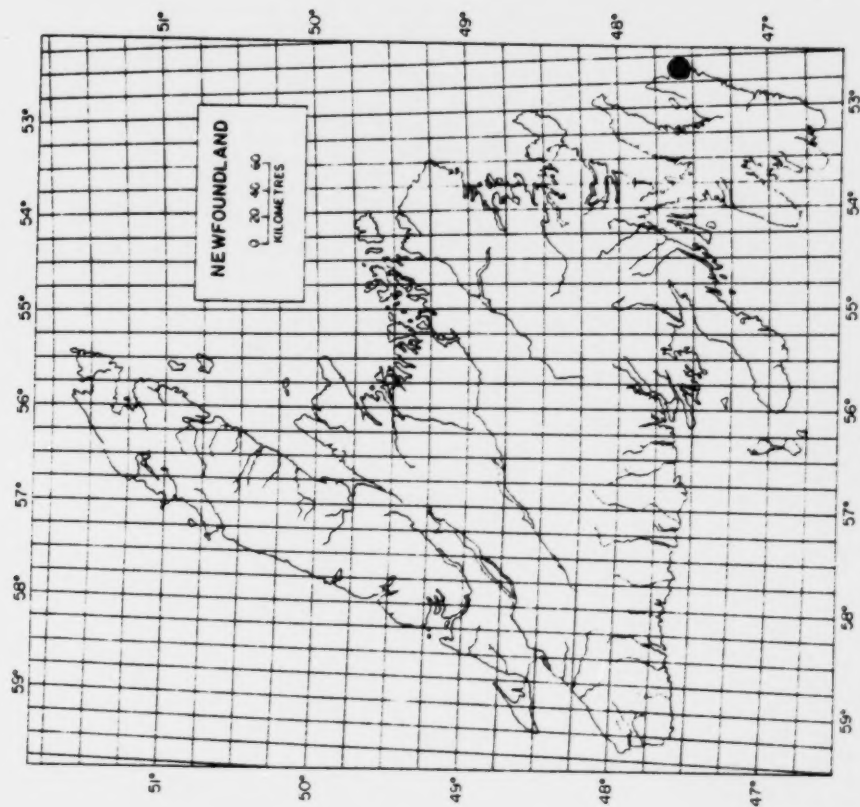
MAP 3: Seligeria brevifolia



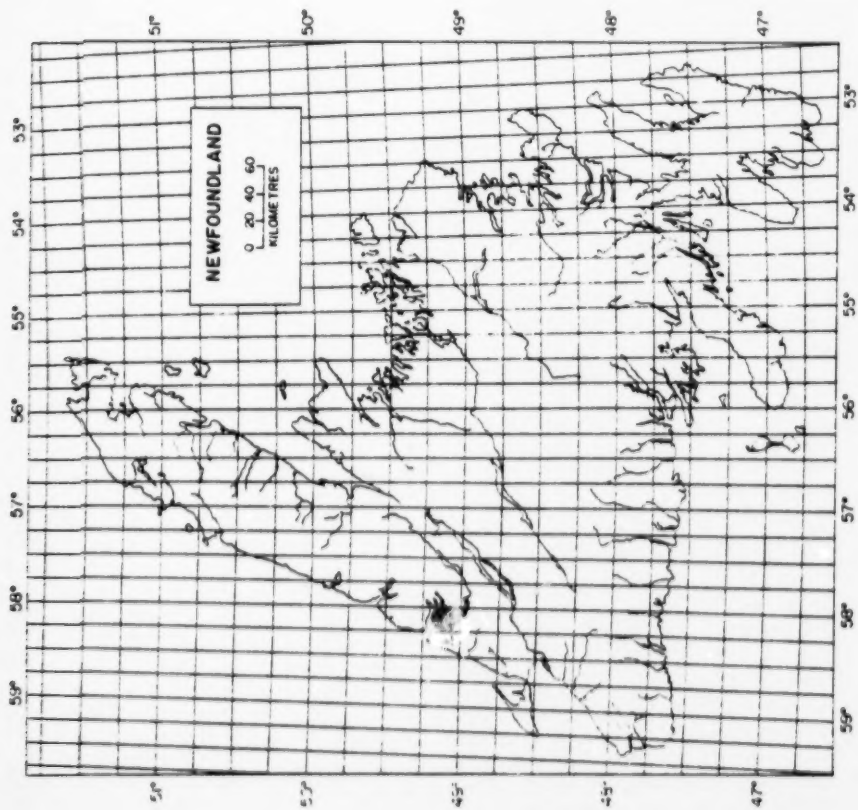
MAP 4: Aongstroemia longipes



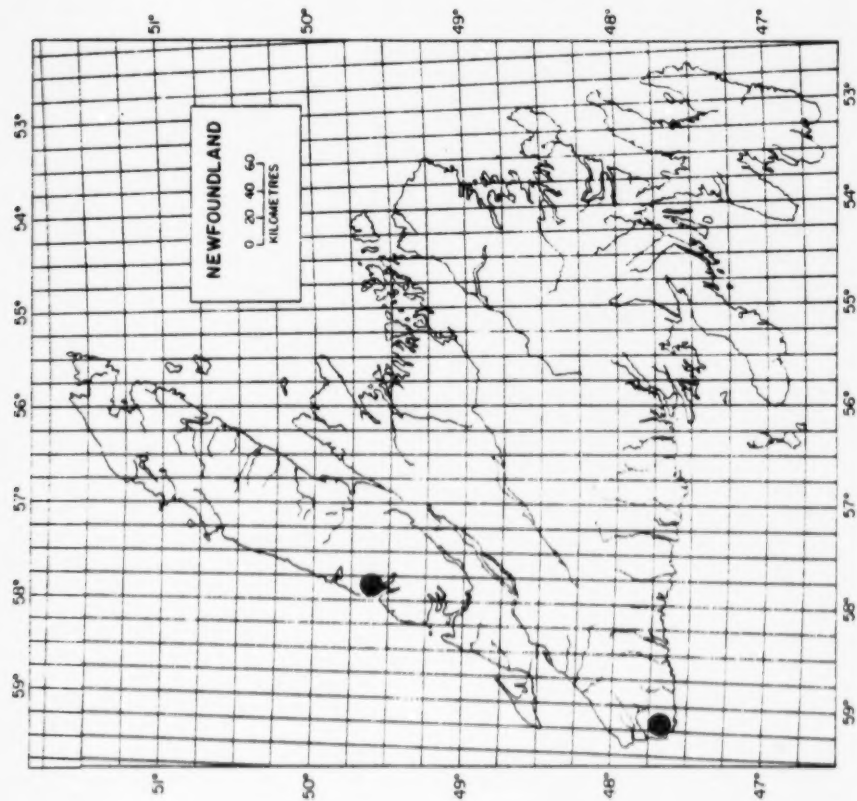
MAP 5: Kiaeria falcata



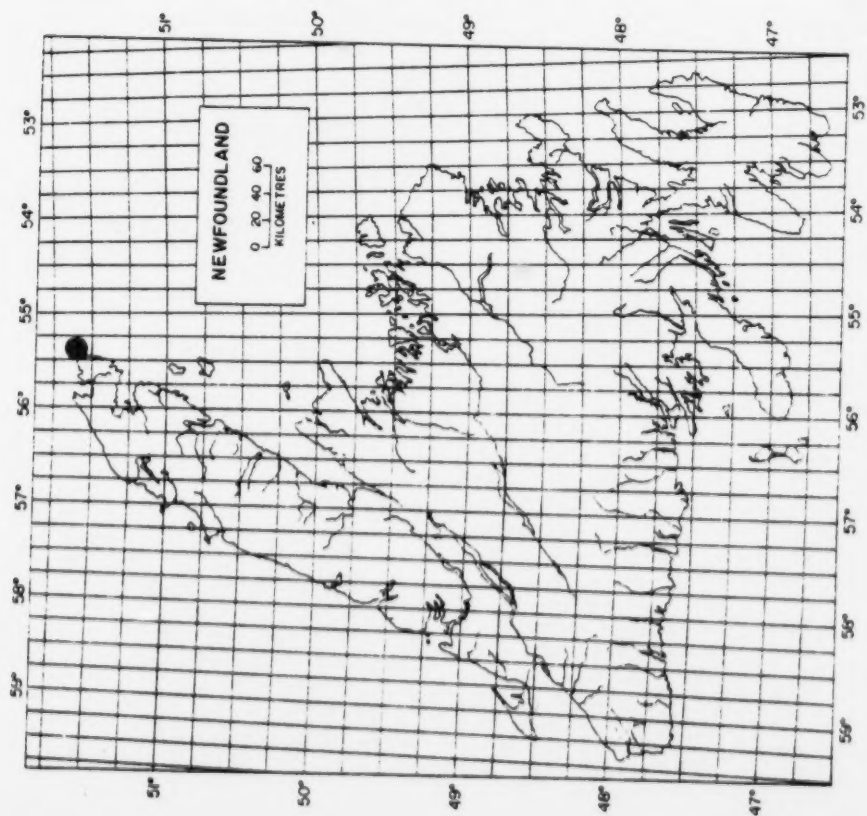
MAP 6: Tortula muralis



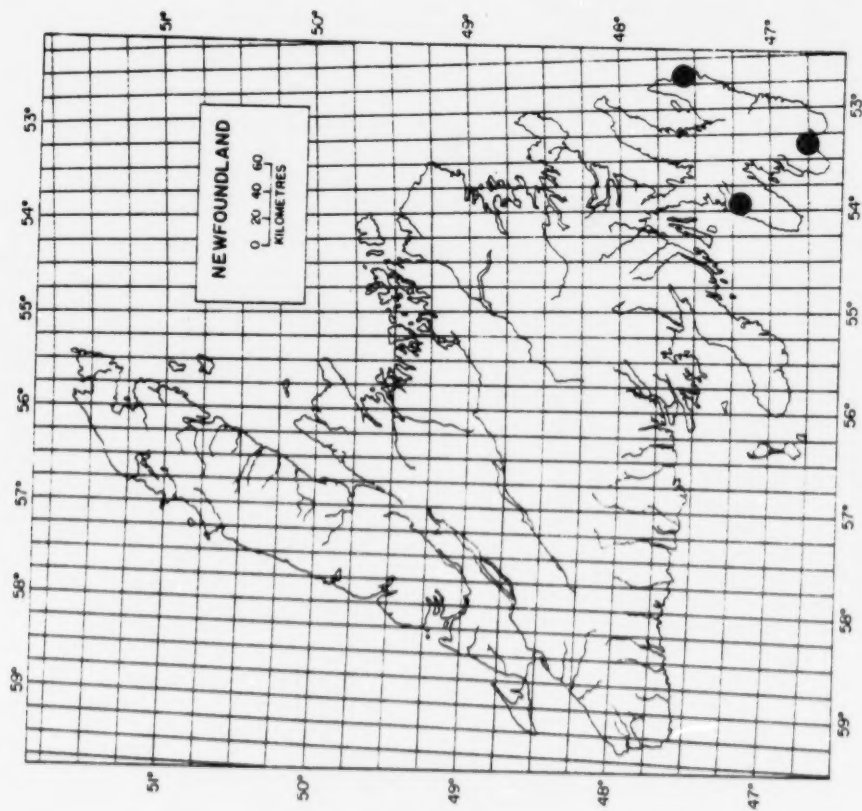
MAP 7: Coscinodon cribrerosus



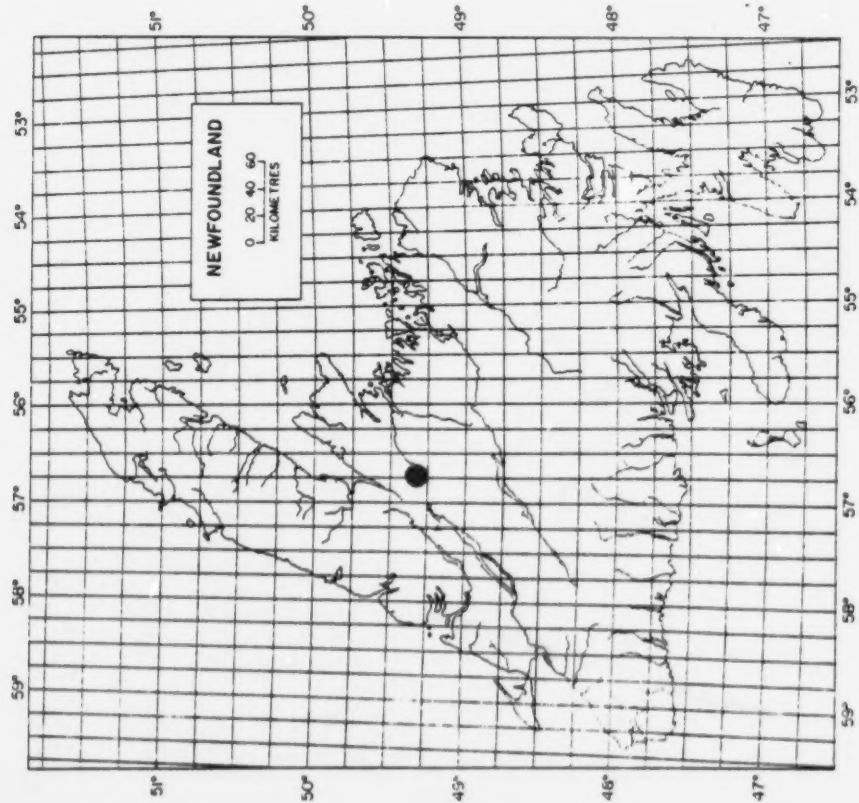
MAP 8: Oedipodium griffithianum



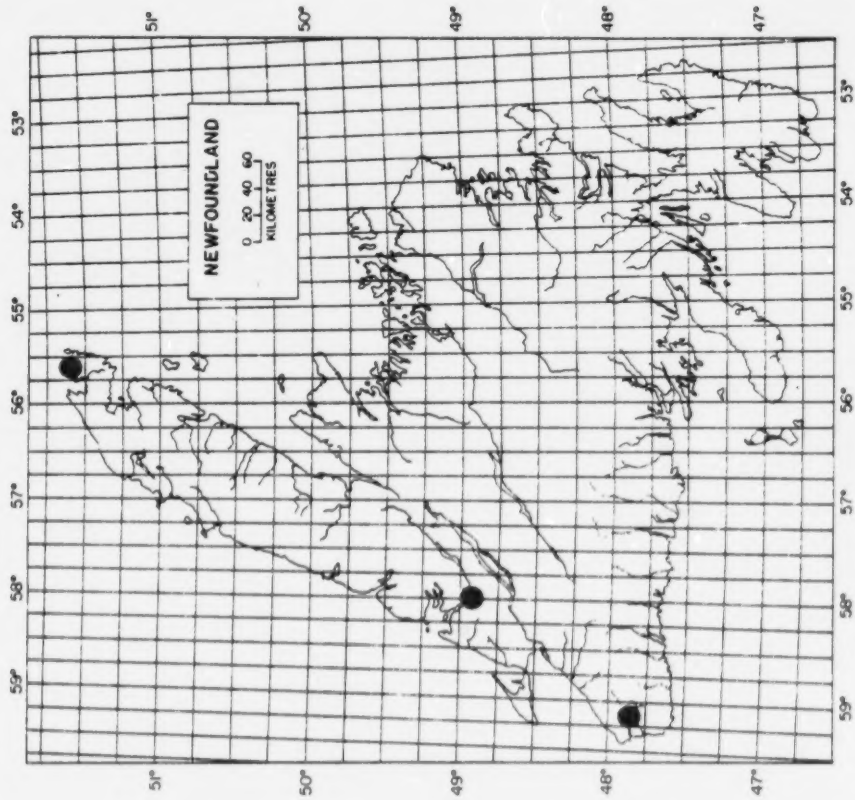
MAP 9: Melichioferia macrocarpa



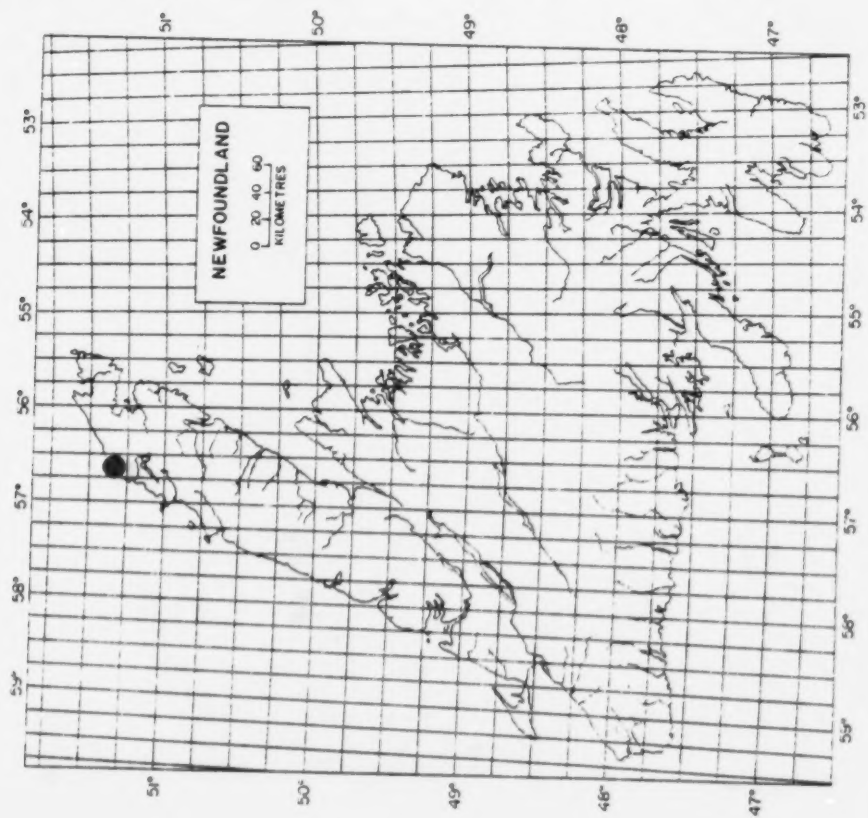
MAP 10: Thuidium tamariscinum



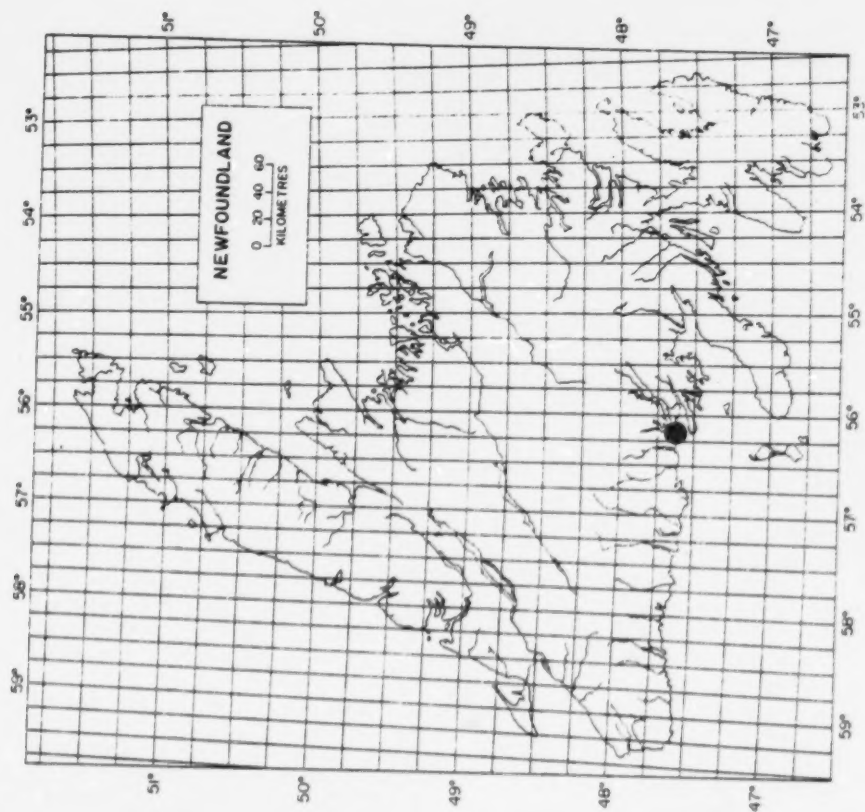
MAP 11: Equisetum hyemale



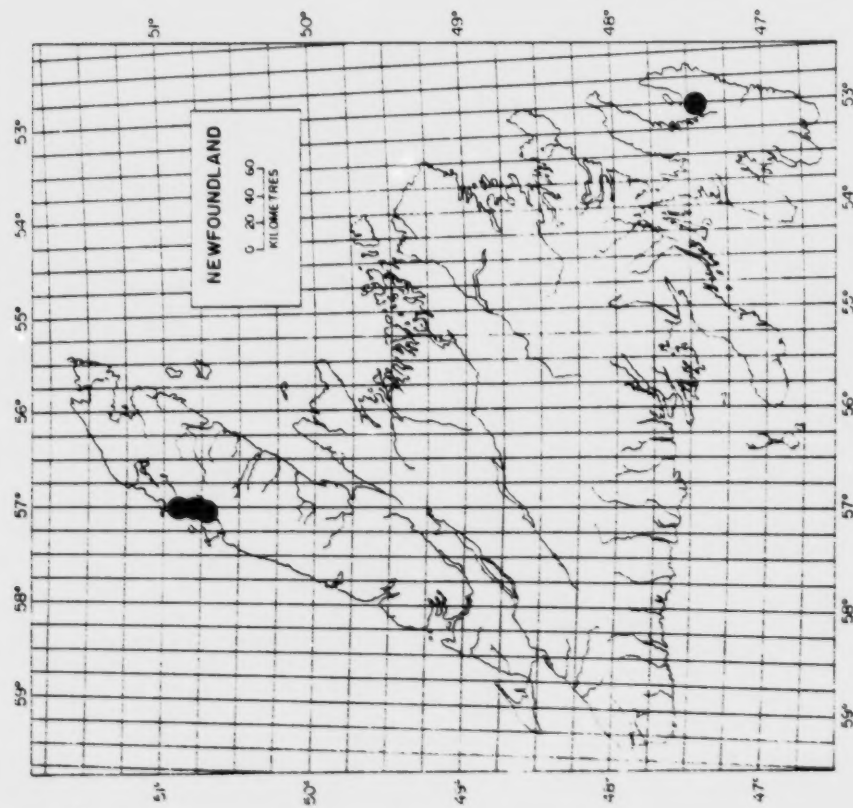
MAP 12: Botrychium lanceolatum



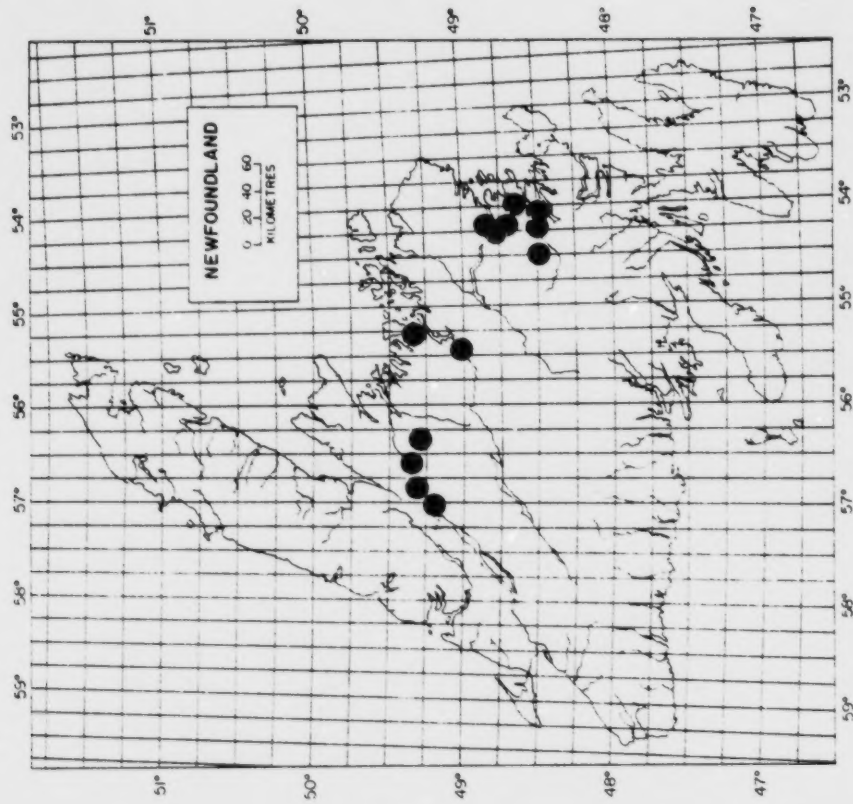
MAP 13: *Cystopteris montana*



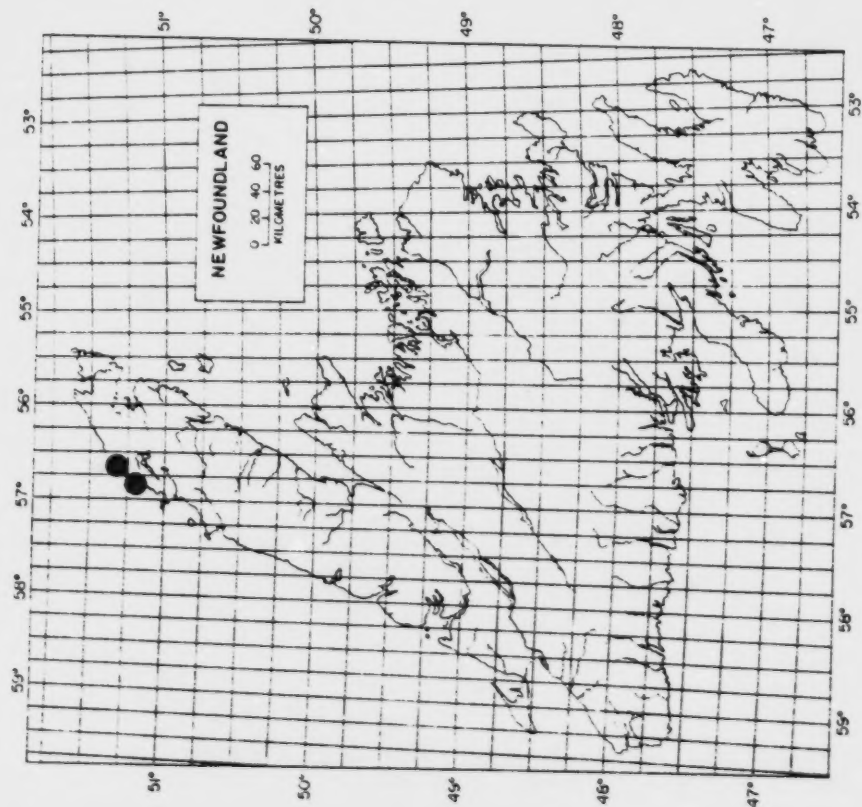
MAP 14: *Dennstaedtia punctilobula*



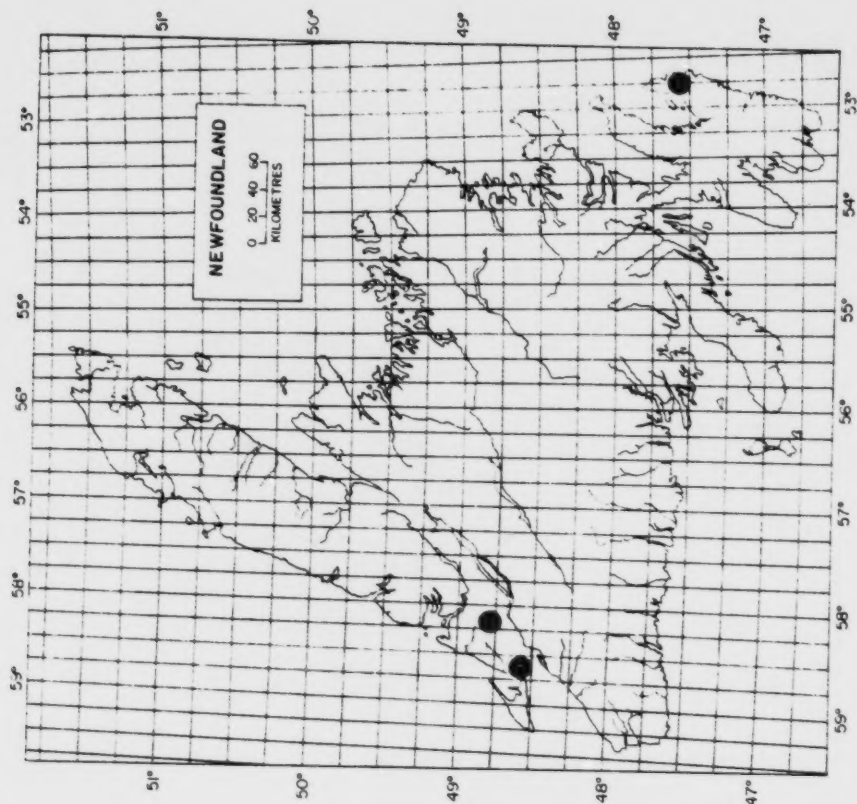
MAP 15: *Athyrium alpestre*



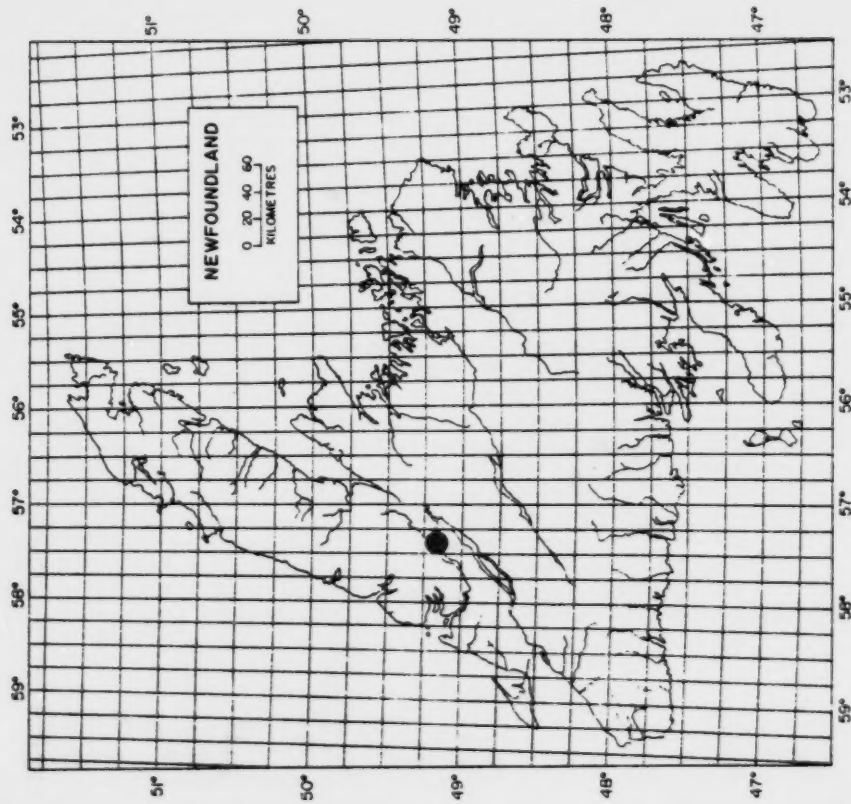
MAP 16: *Pinus resinosa*



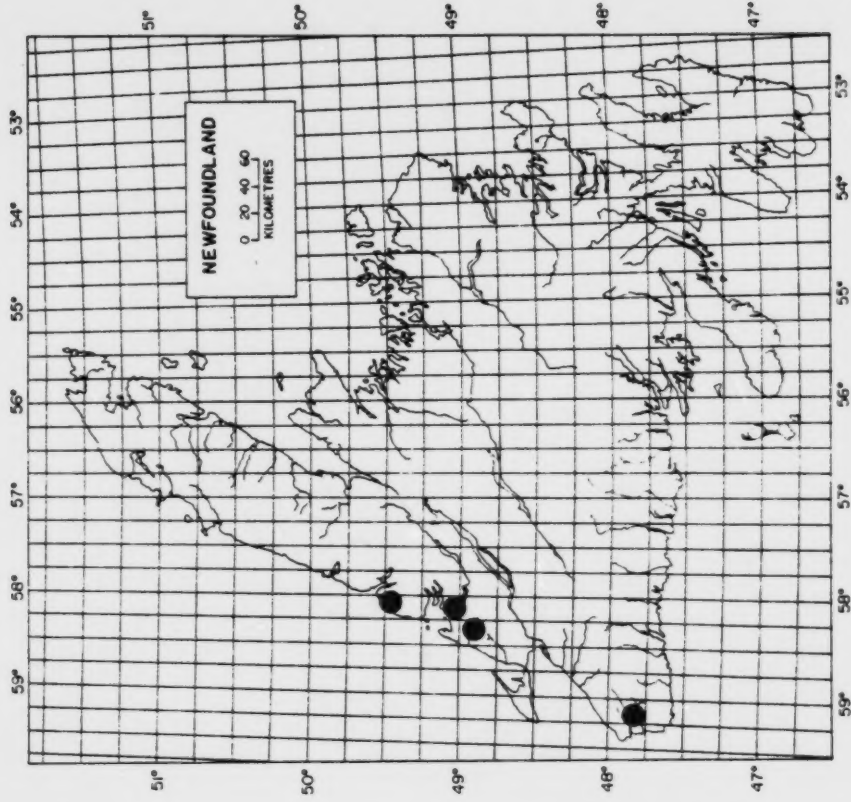
MAP 17: Potamogeton vaginatus



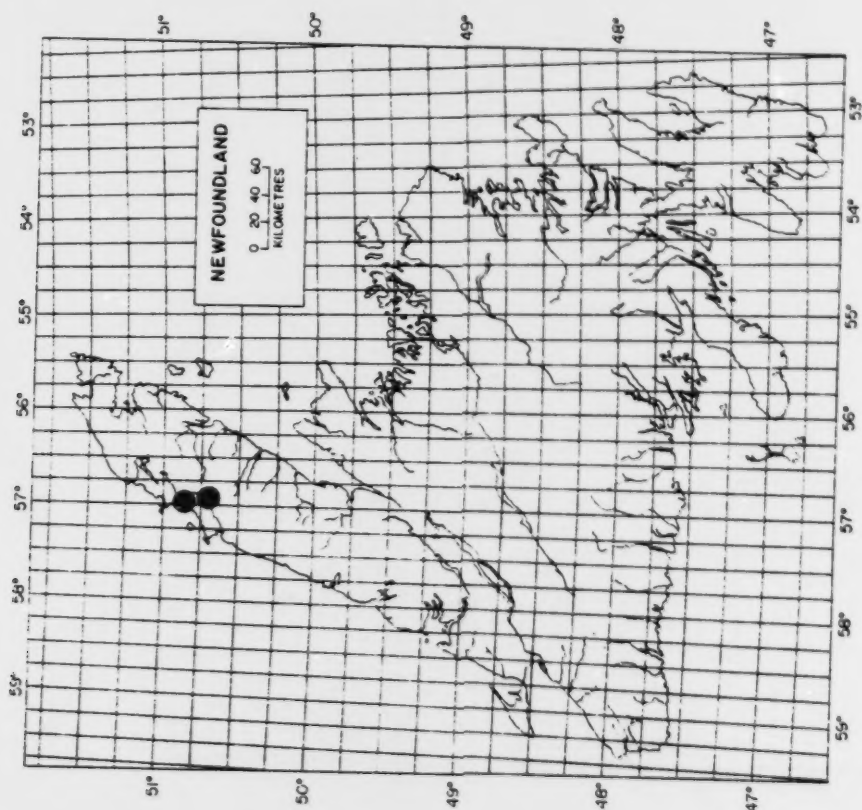
MAP 18: Potamogeton friesii



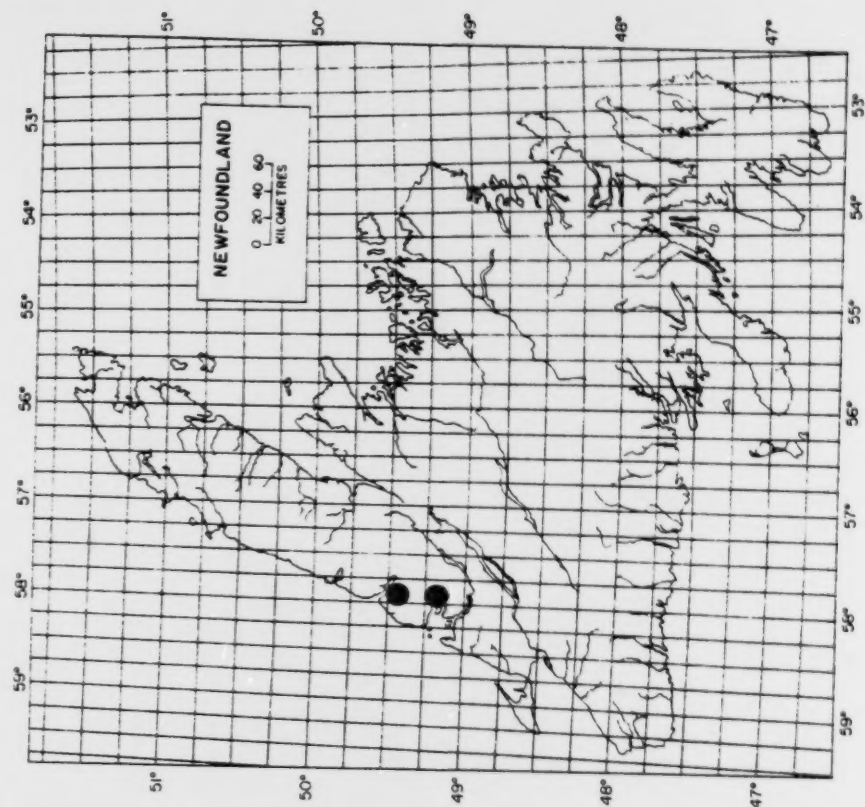
MAP 19: Alisma triviale



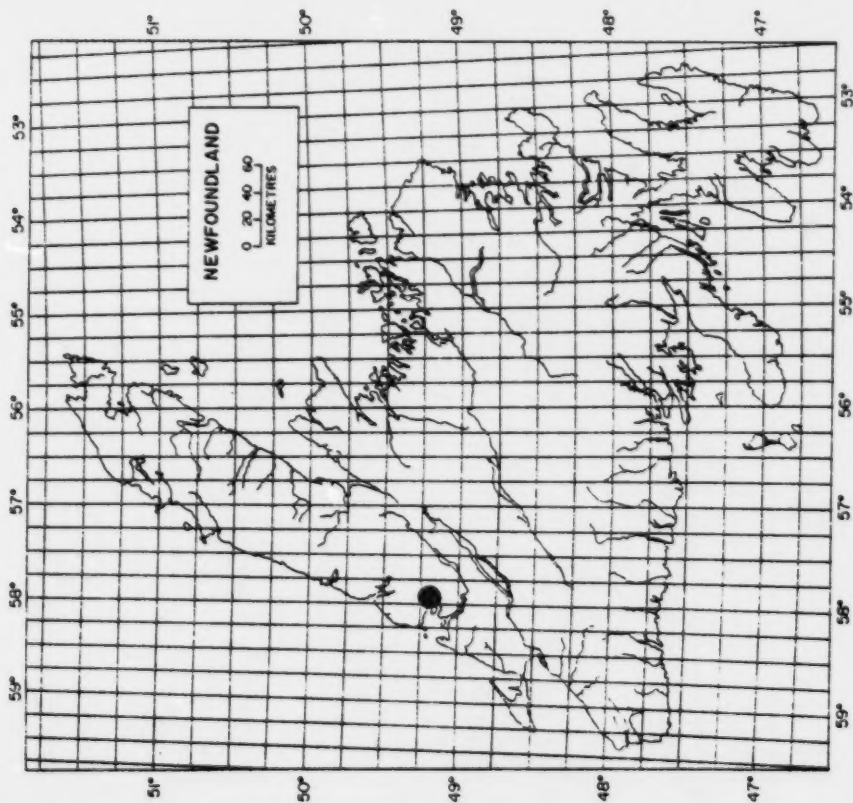
MAP 20: Festuca scabrella



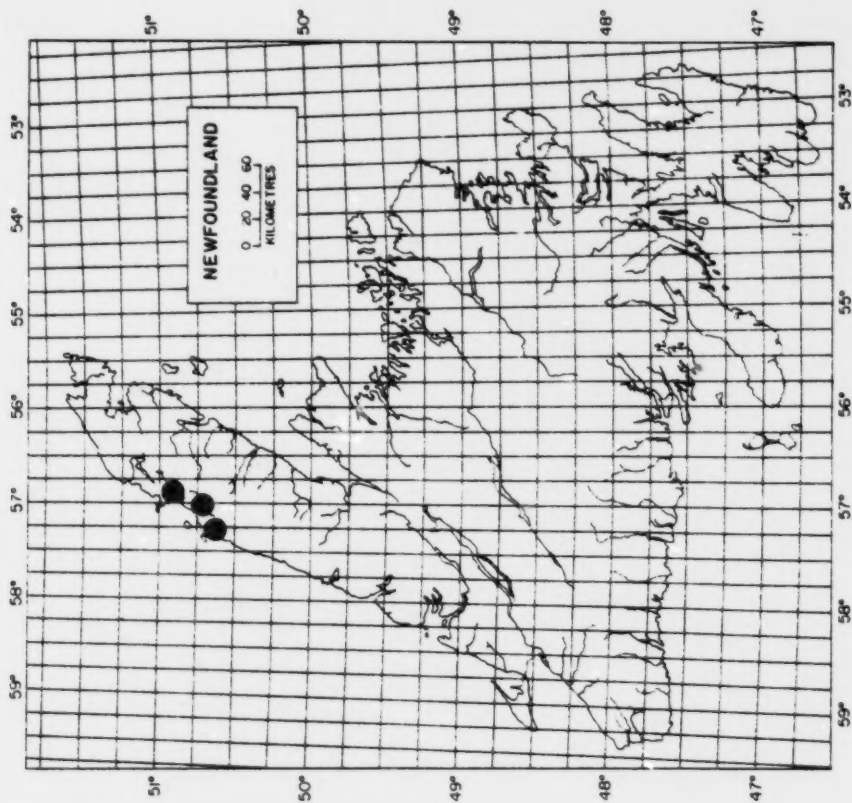
MAP 21: Deschampsia atropurpurea



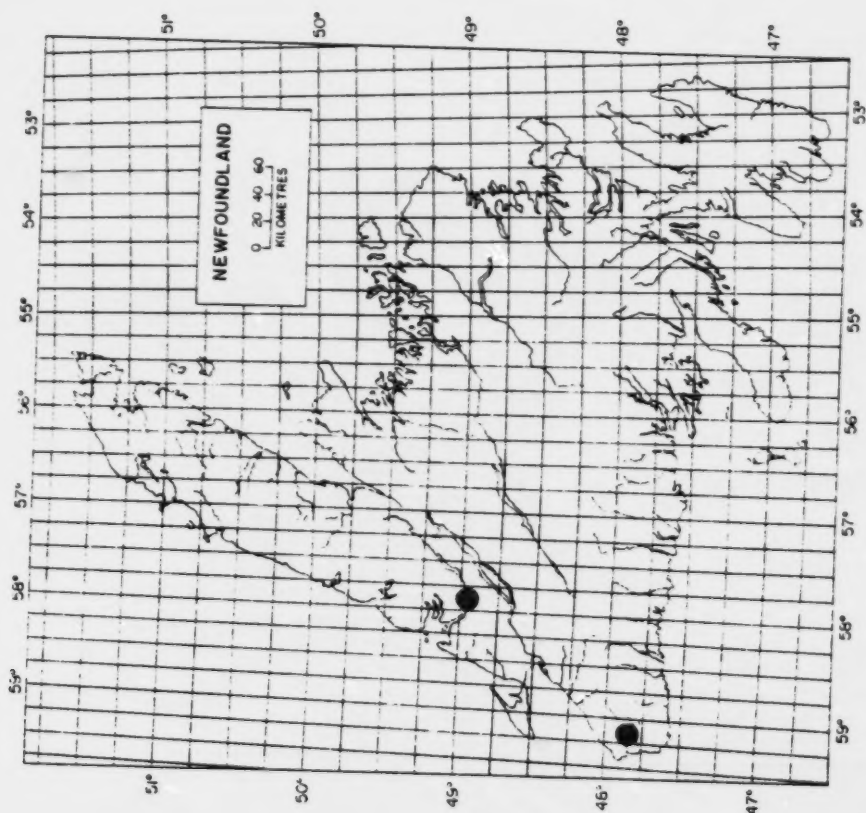
MAP 22: Danthonia intermedia



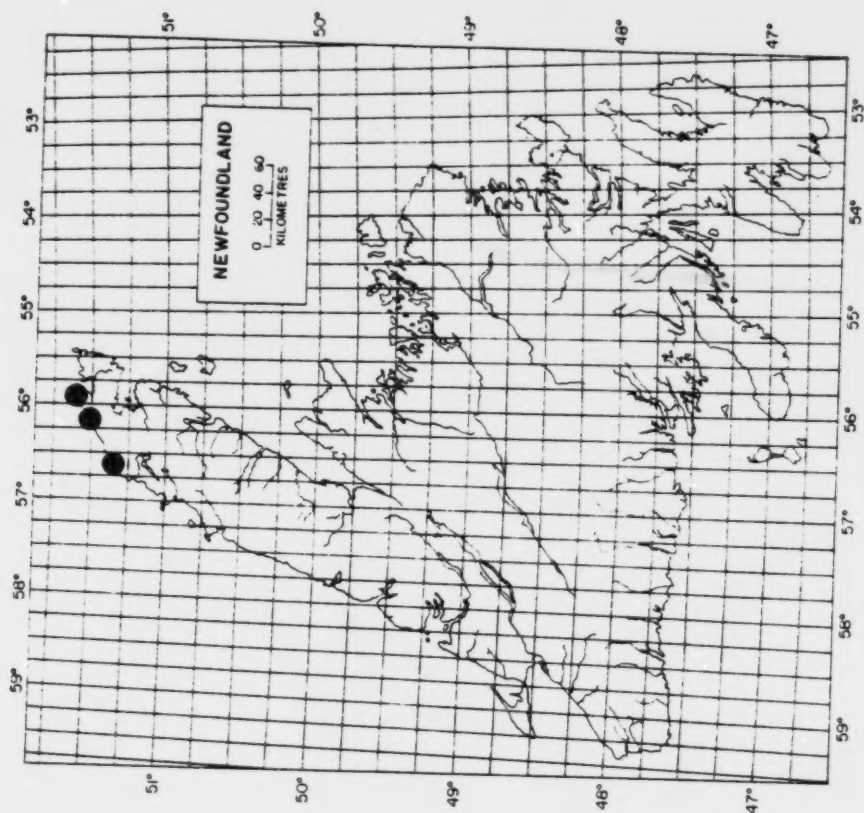
MAP 23: Calamagrostis purpurascens



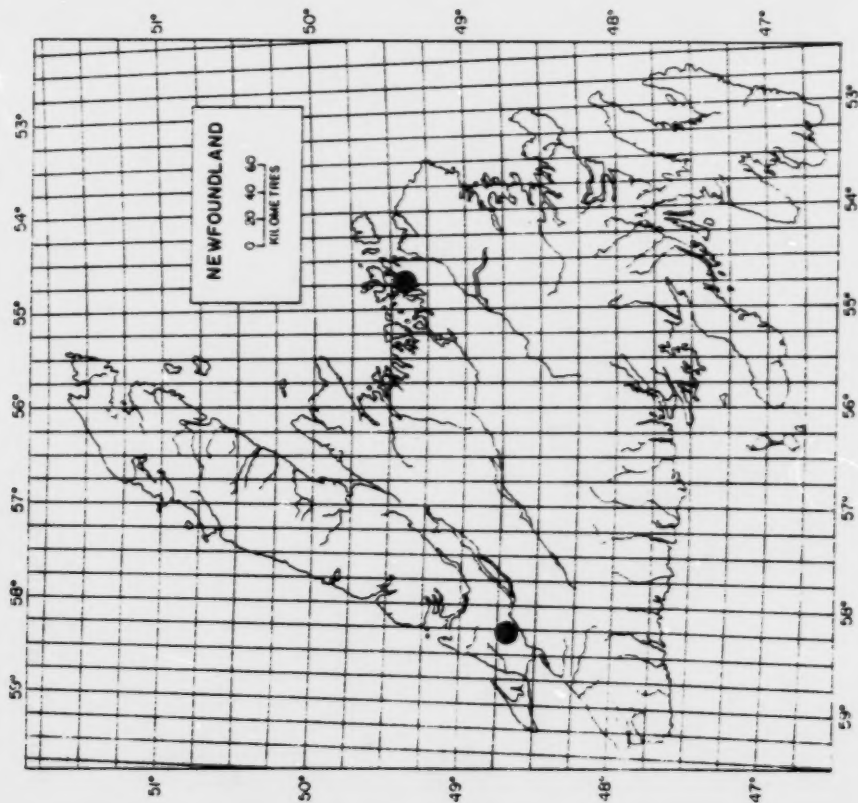
MAP 24: Milium effusum



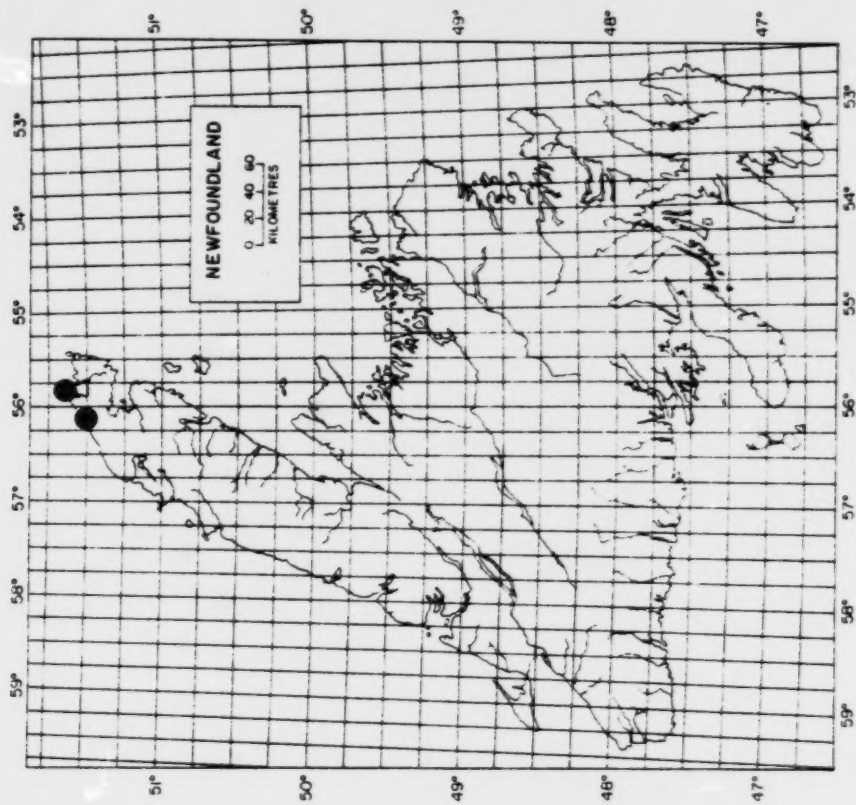
MAP 25: Scirpus validus



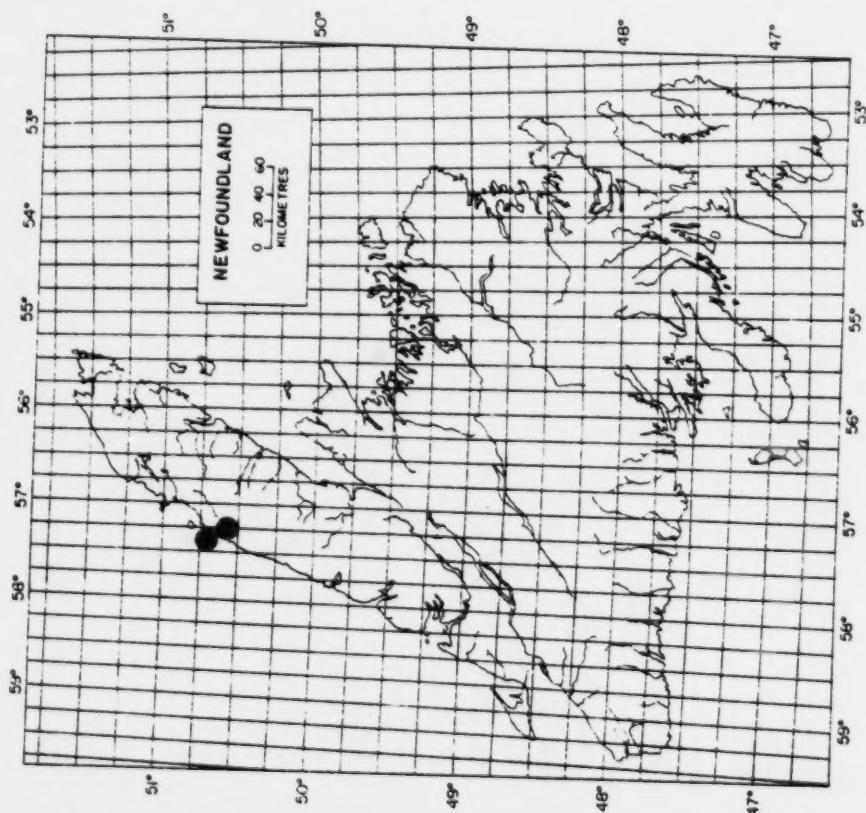
MAP 26: Eriophorum callitrix



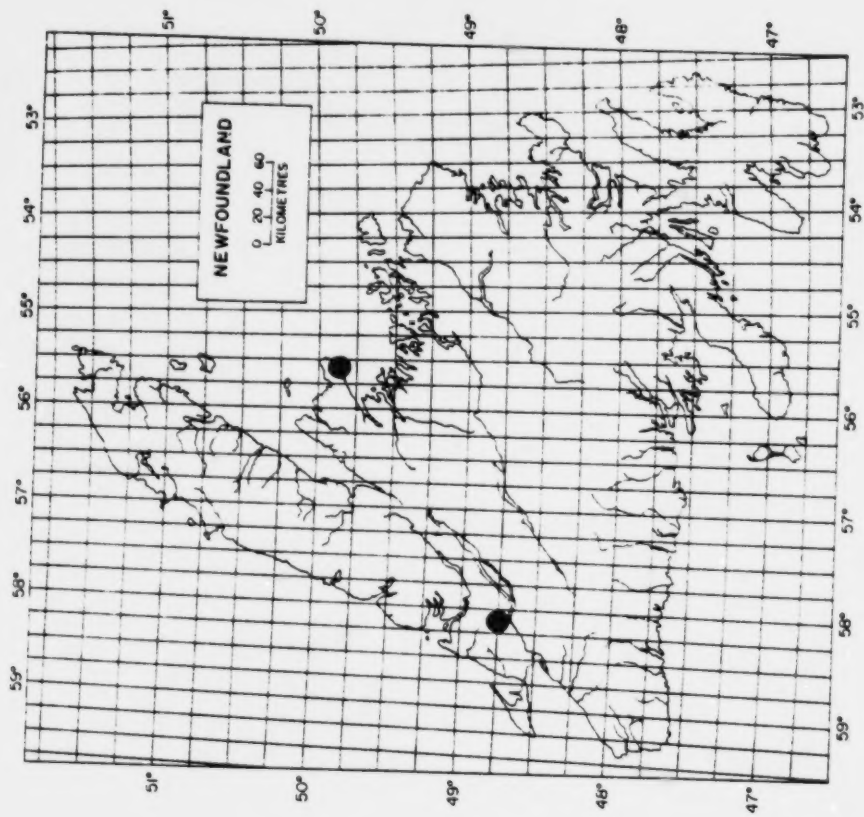
MAP 27: Cladium mariscoides



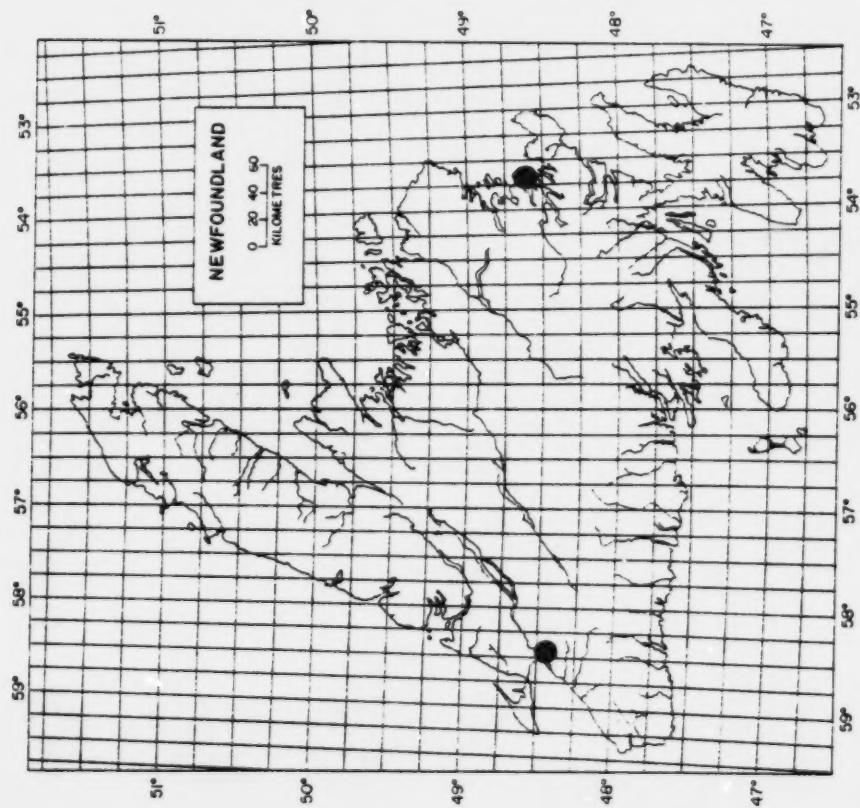
MAP 28: Carex capitata



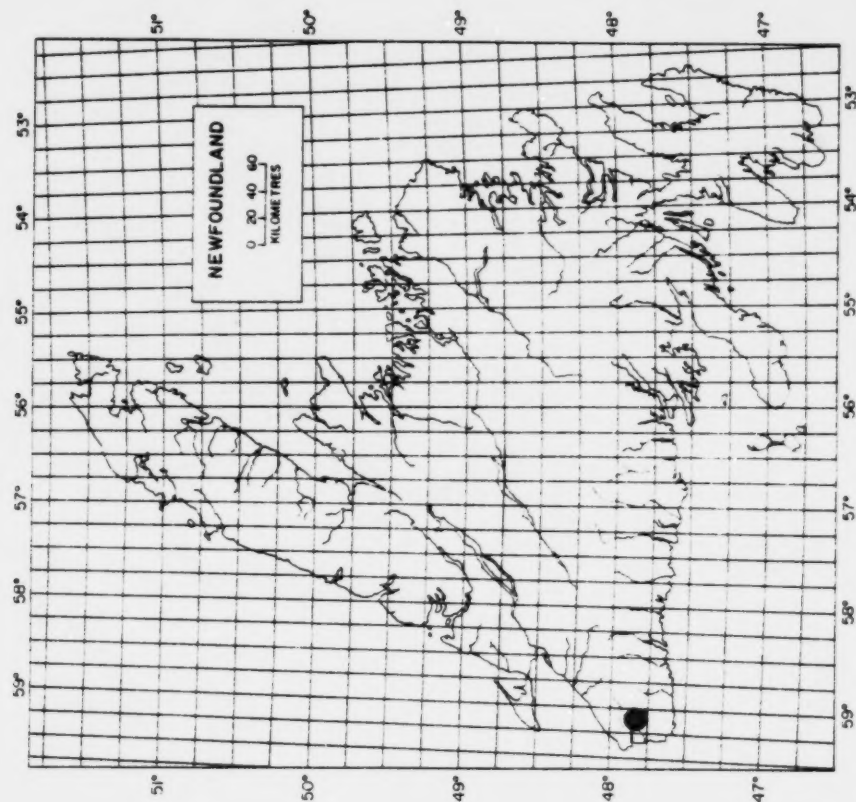
MAP 29: Carex langeana



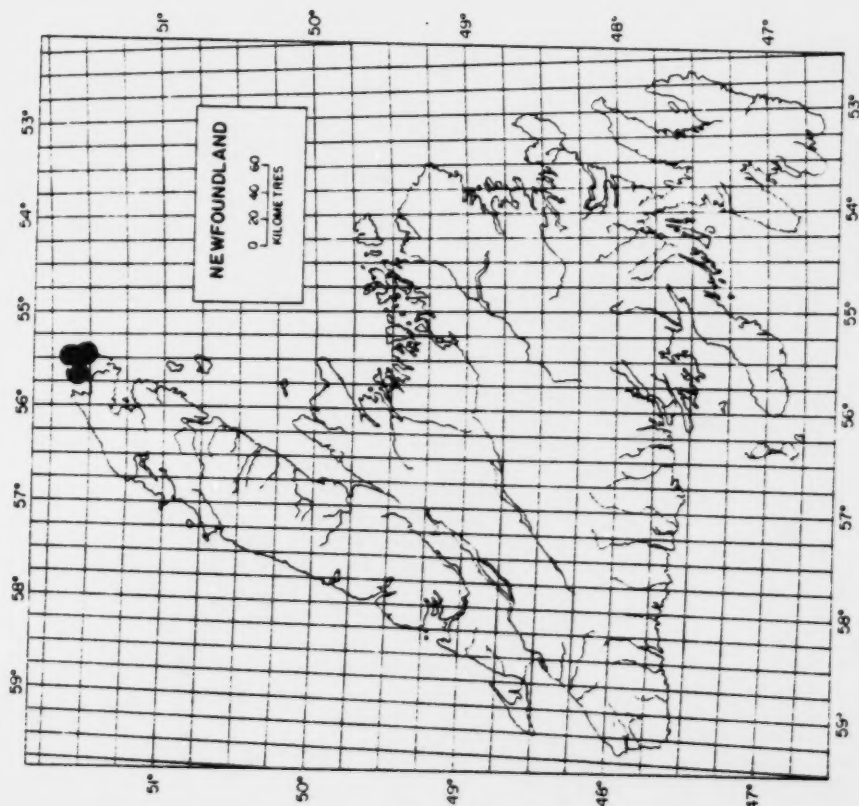
MAP 30: Carex vulpinoidea



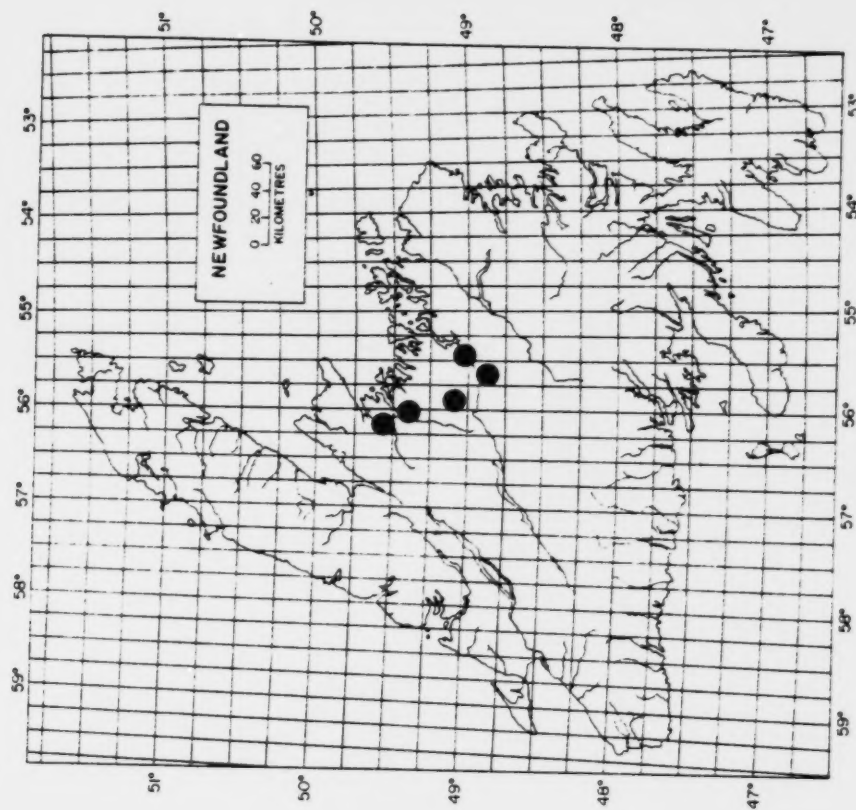
MAP 31: Carex silicea



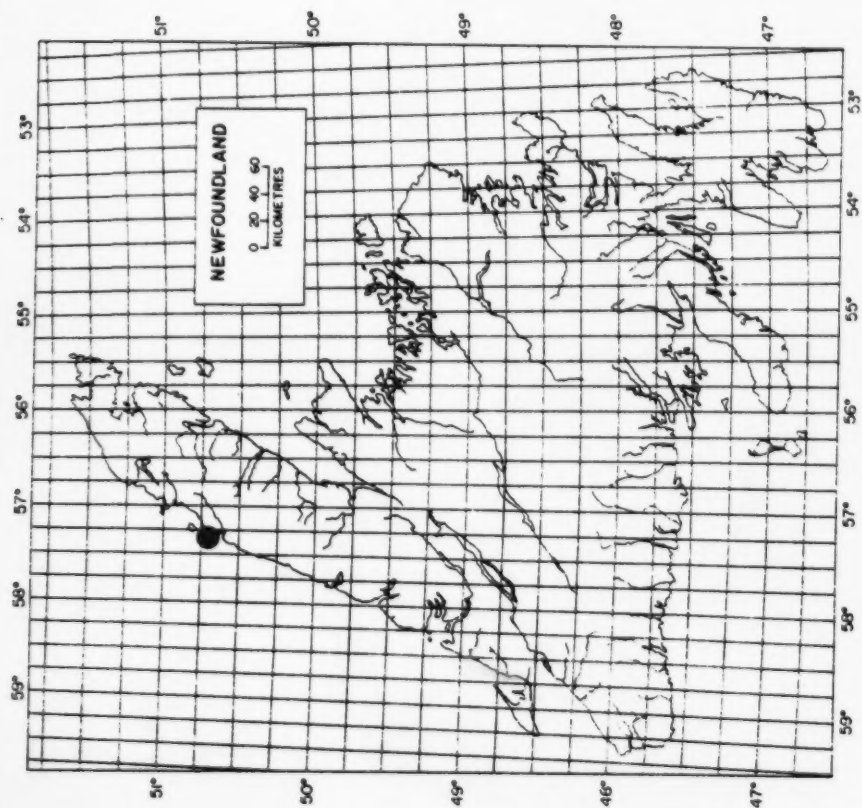
MAP 32: Carex praticola



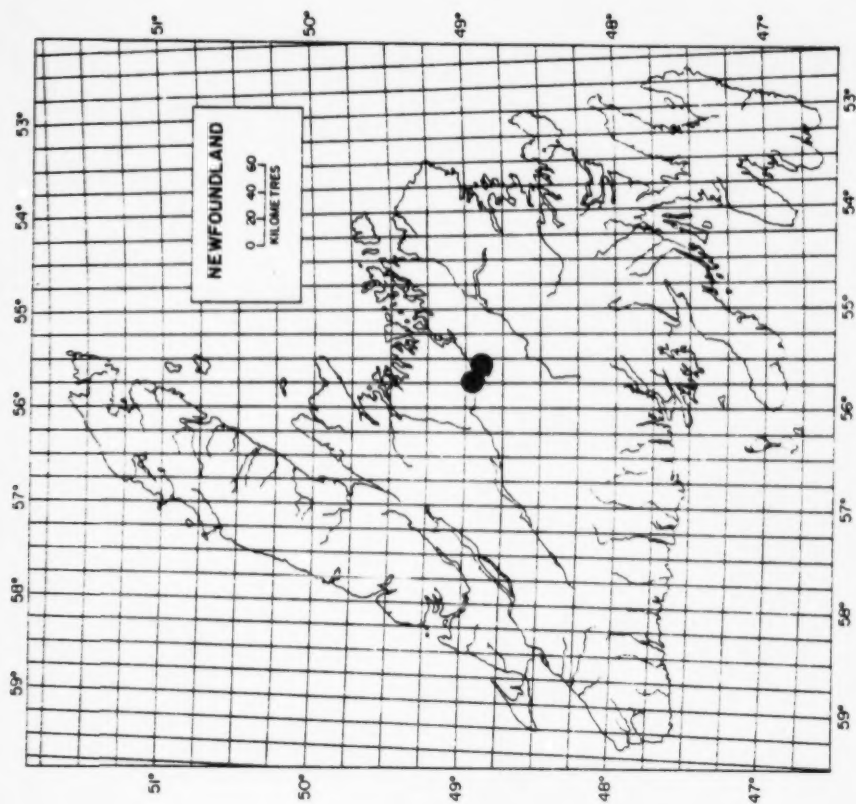
MAP 33: Carex norvegica



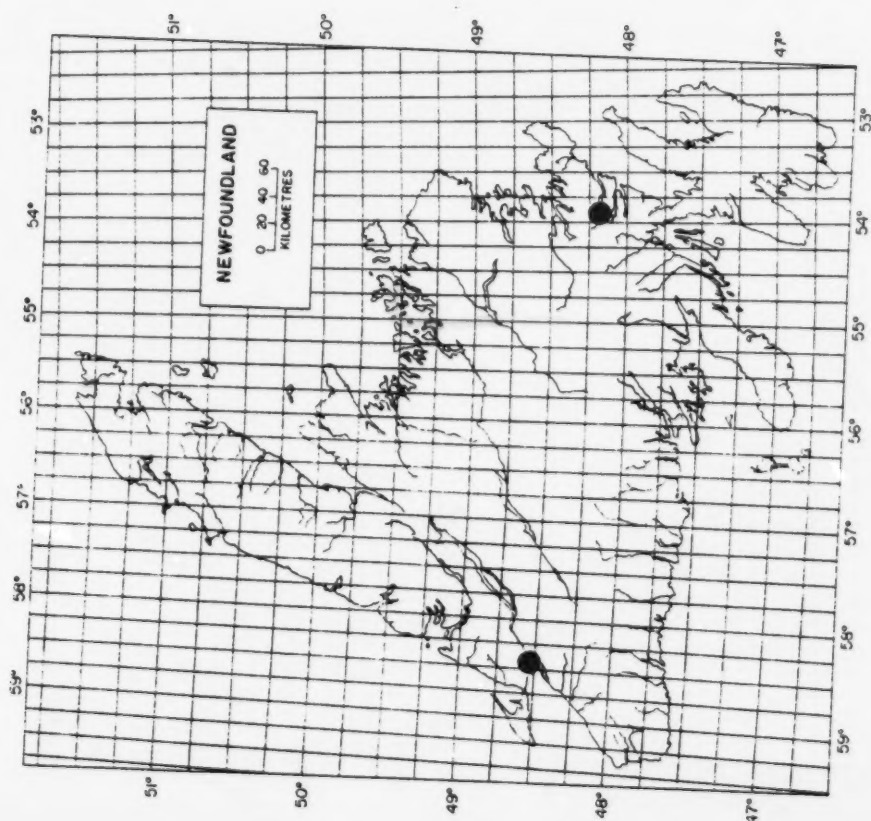
MAP 34: Carex houghtonii



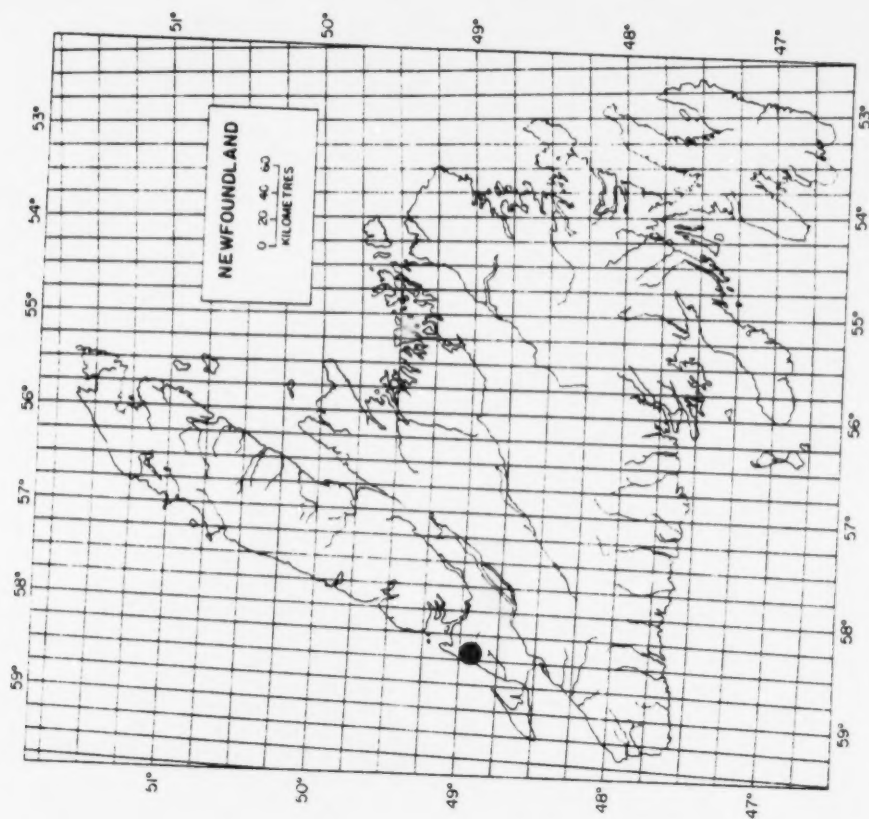
MAP 35: Carex crawei



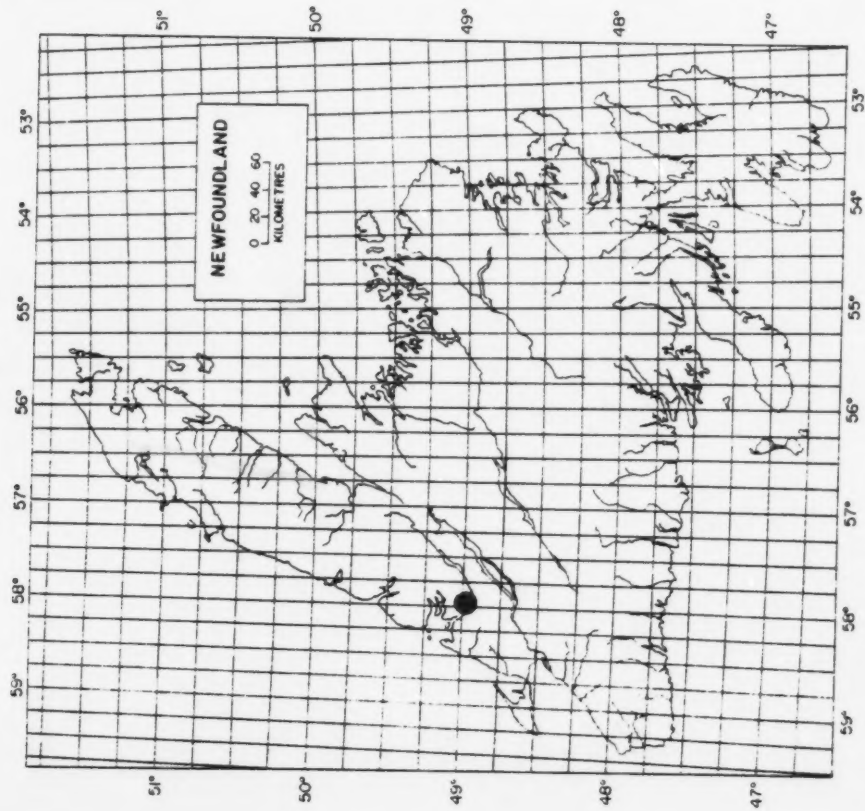
MAP 36: Carex katahdinensis



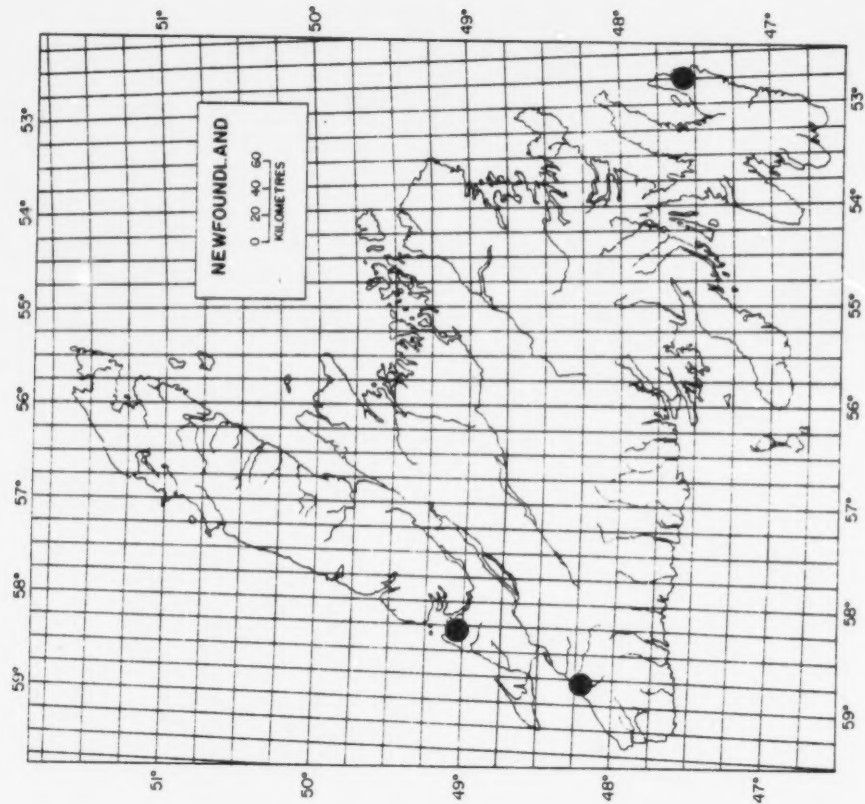
MAP 37: Carex lacustris



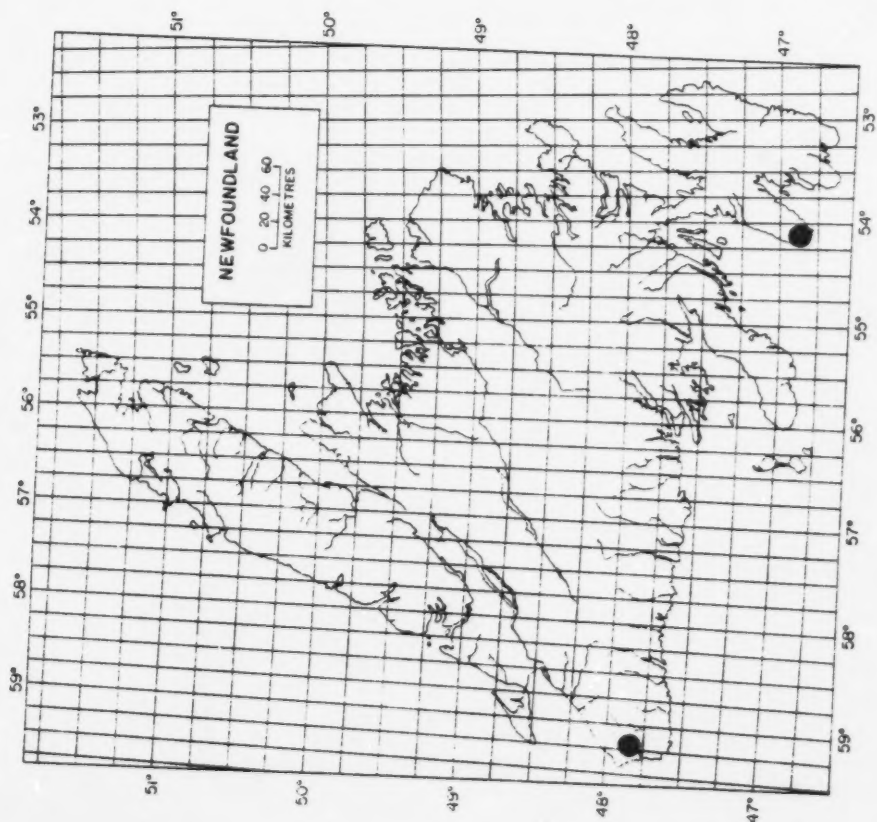
MAP 38: Carex hystrix



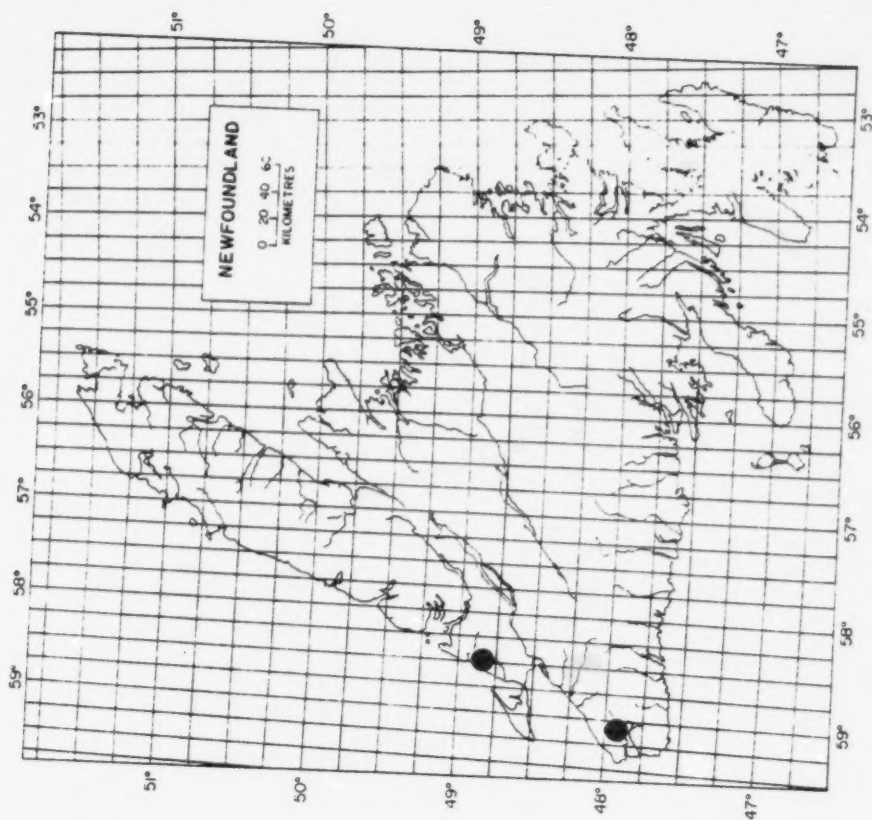
MAP 39: Juncus compressus



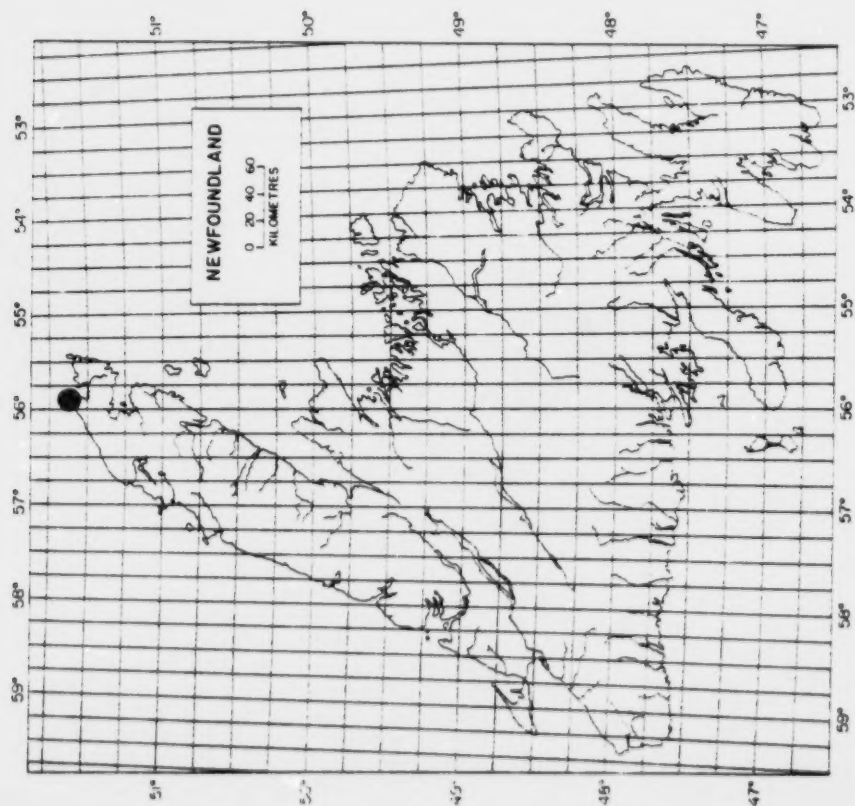
MAP 40: Juncus longistylis



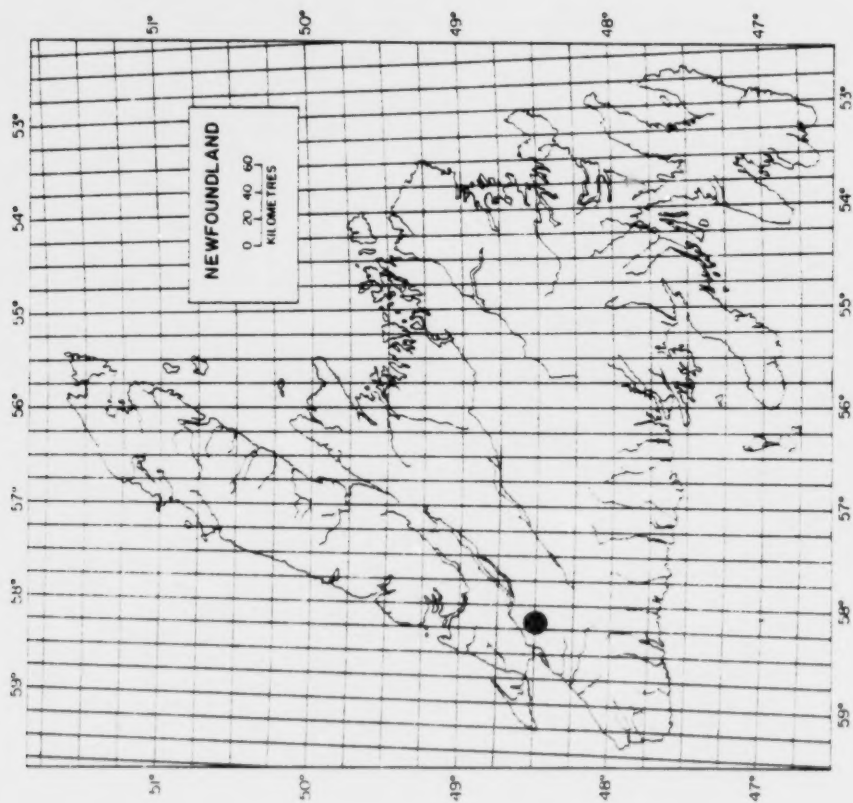
MAP 41: Luzula acuminata



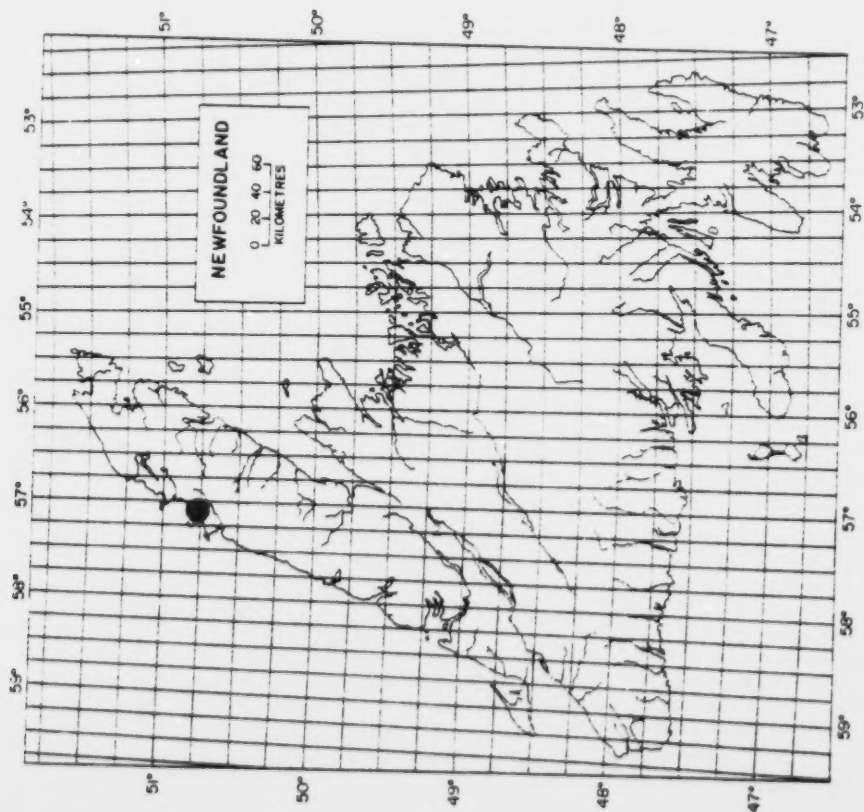
MAP 42: Smilacina racemosa



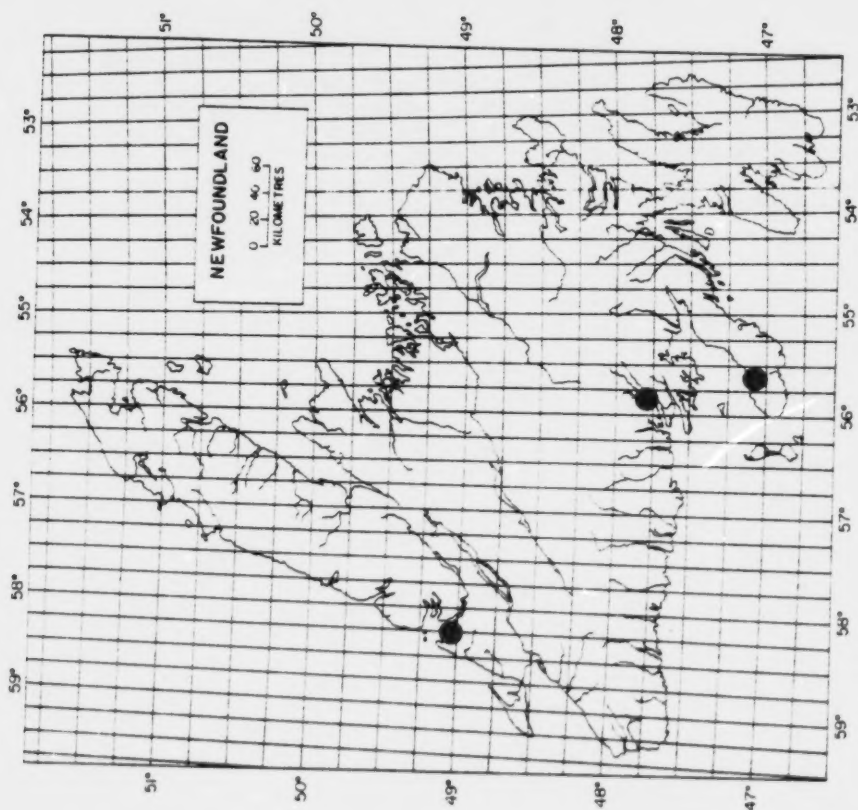
MAP 43: Platanthera albida var. straminea



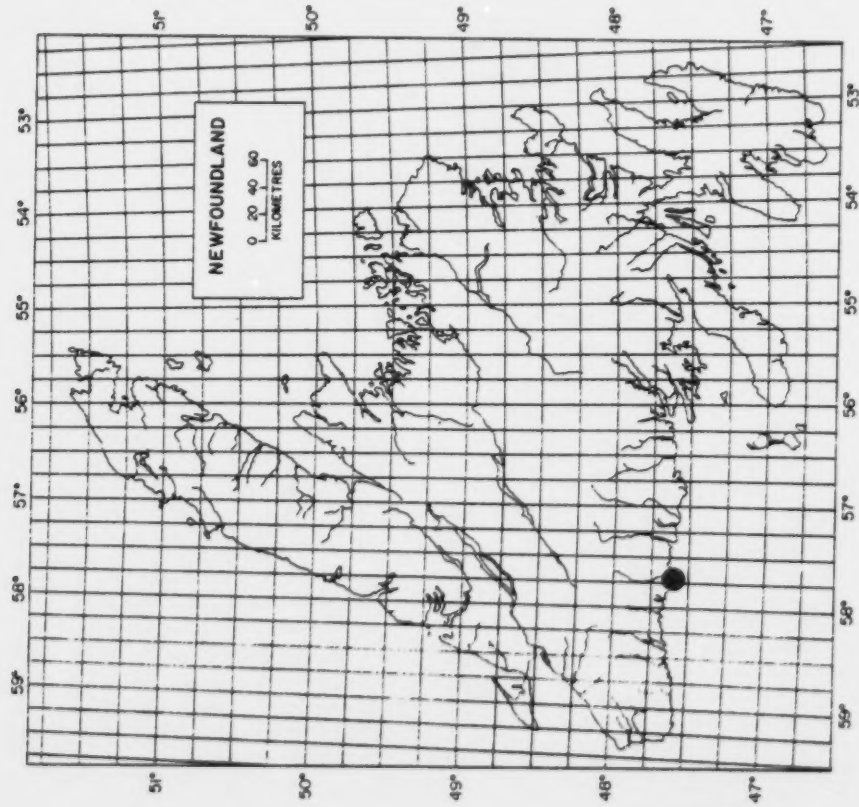
MAP 44: Platanthera hookeri



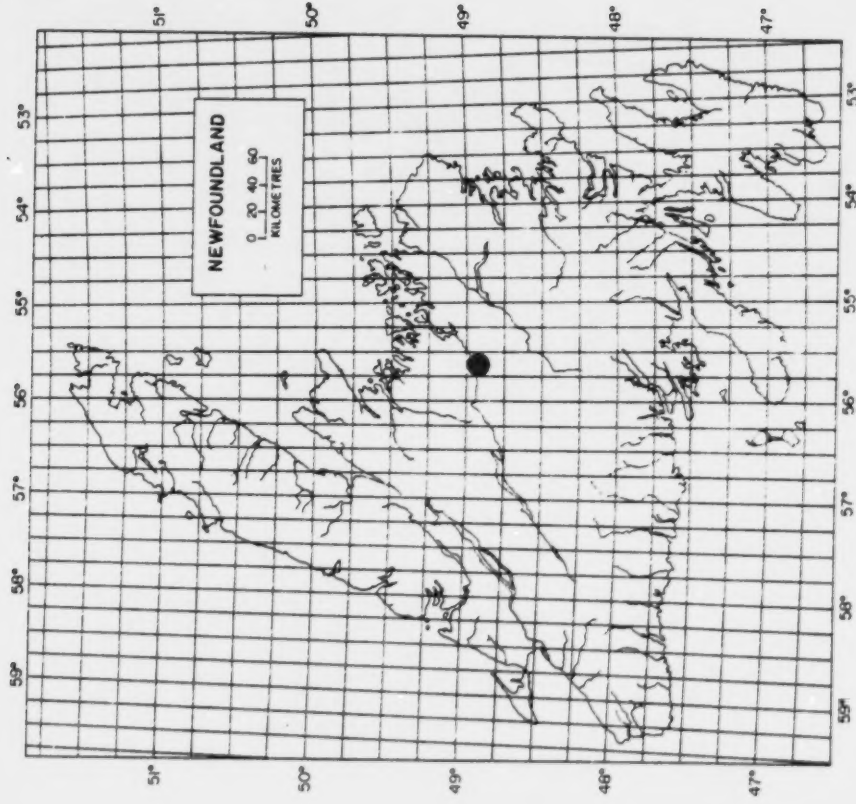
MAP 45: *Listera borealis*



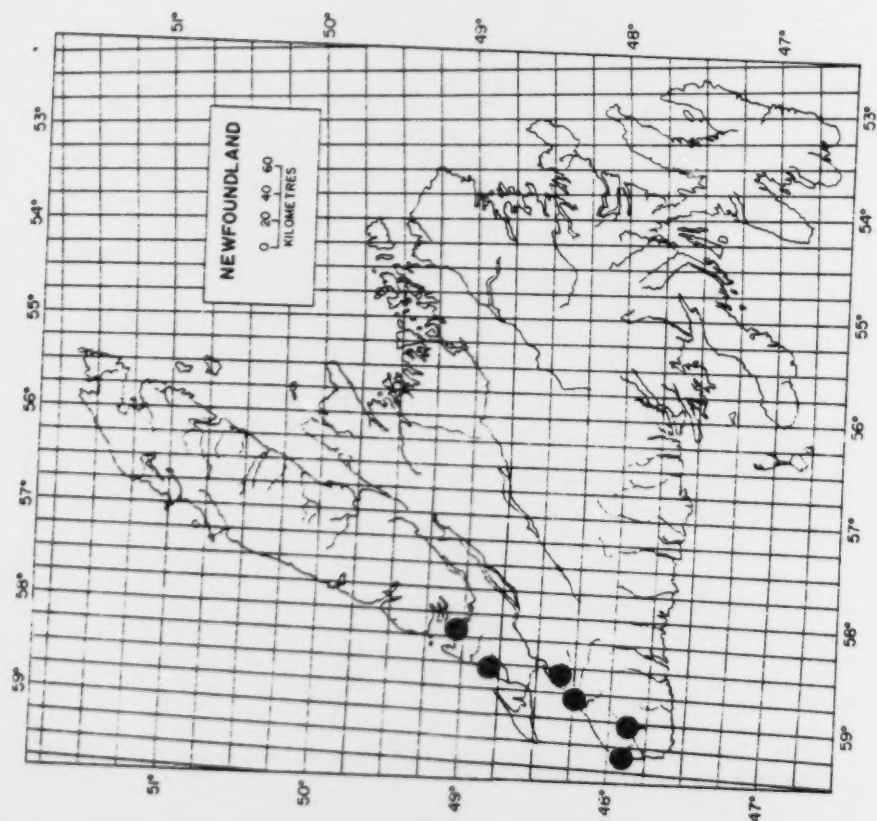
MAP 46: *Myrica pensylvanica*



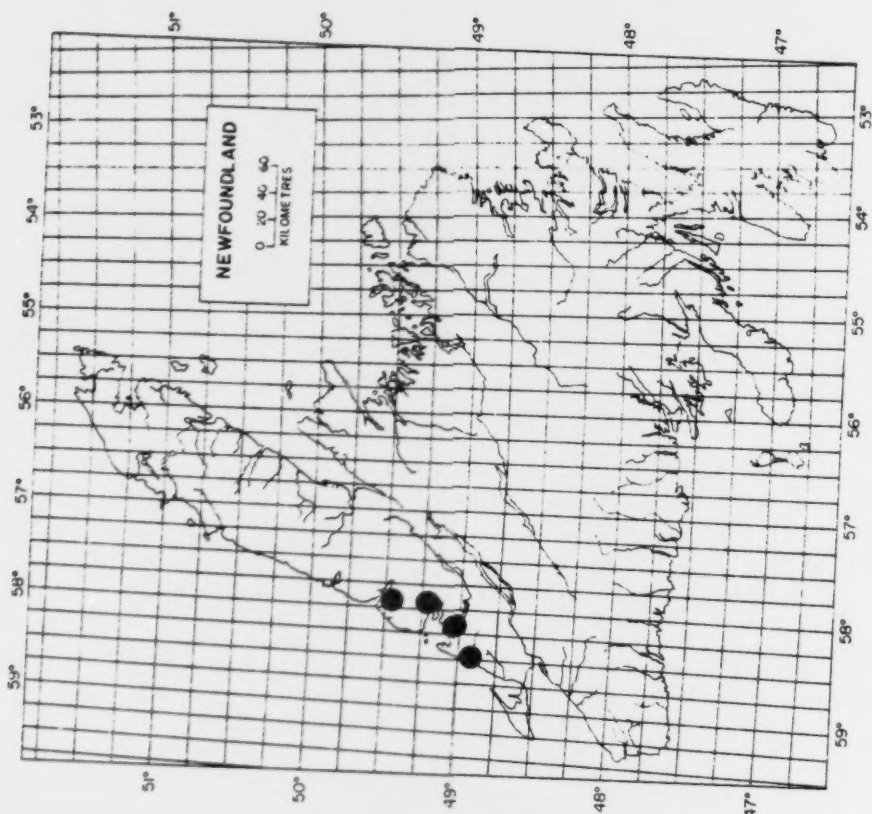
MAP 47: Polygonum allocarpum



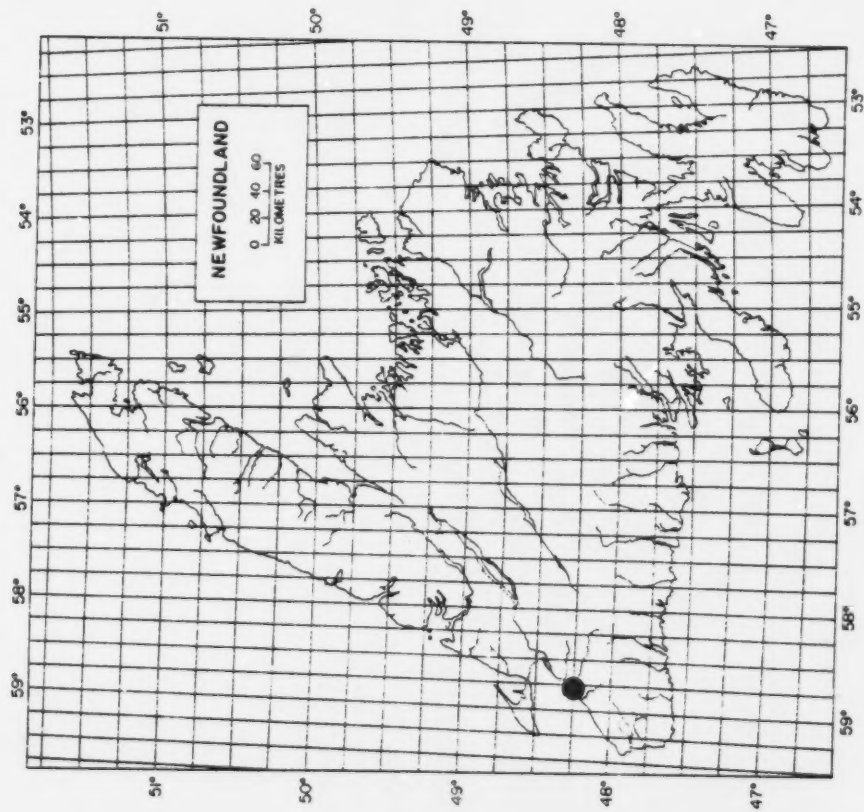
MAP 48: Polygonum cilinode



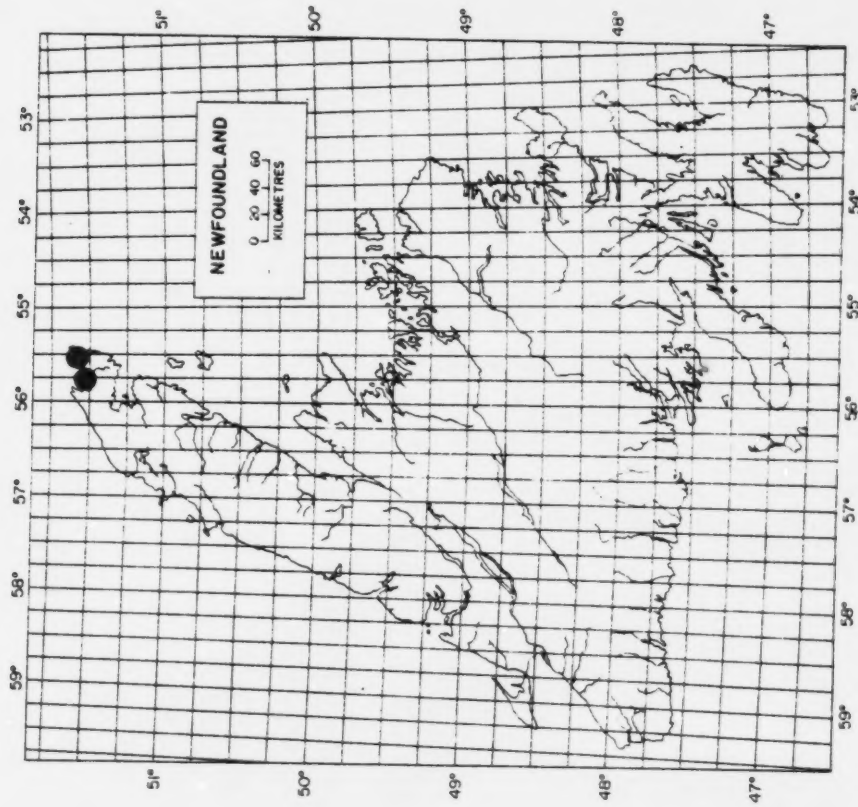
MAP 49: Claytonia caroliniana



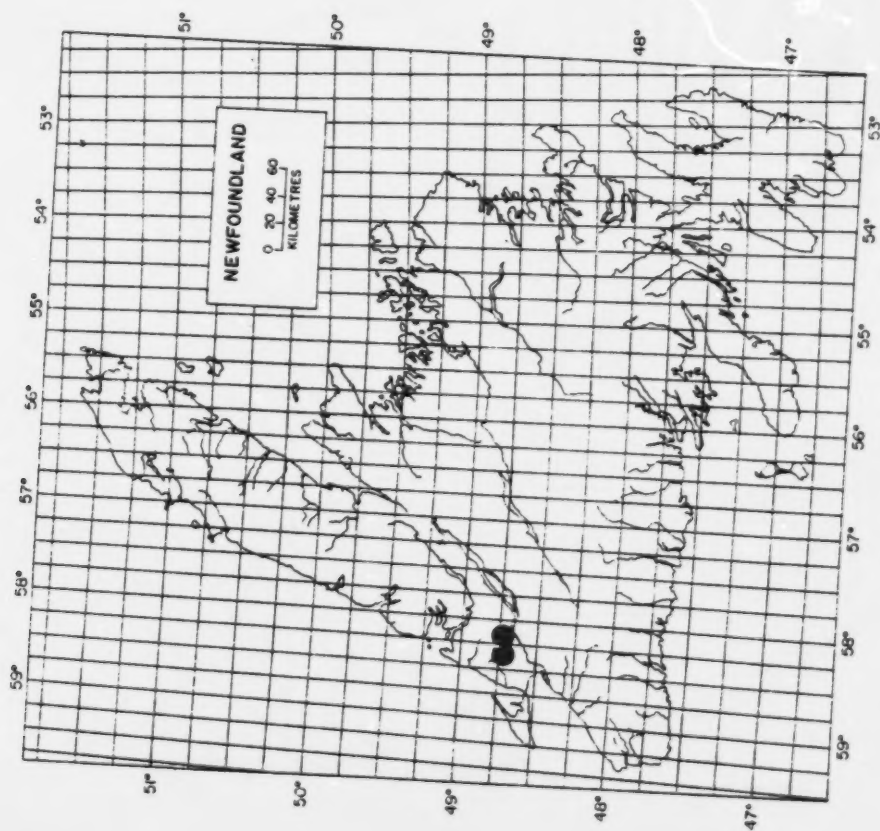
MAP 50: Cerastium terrae-novae



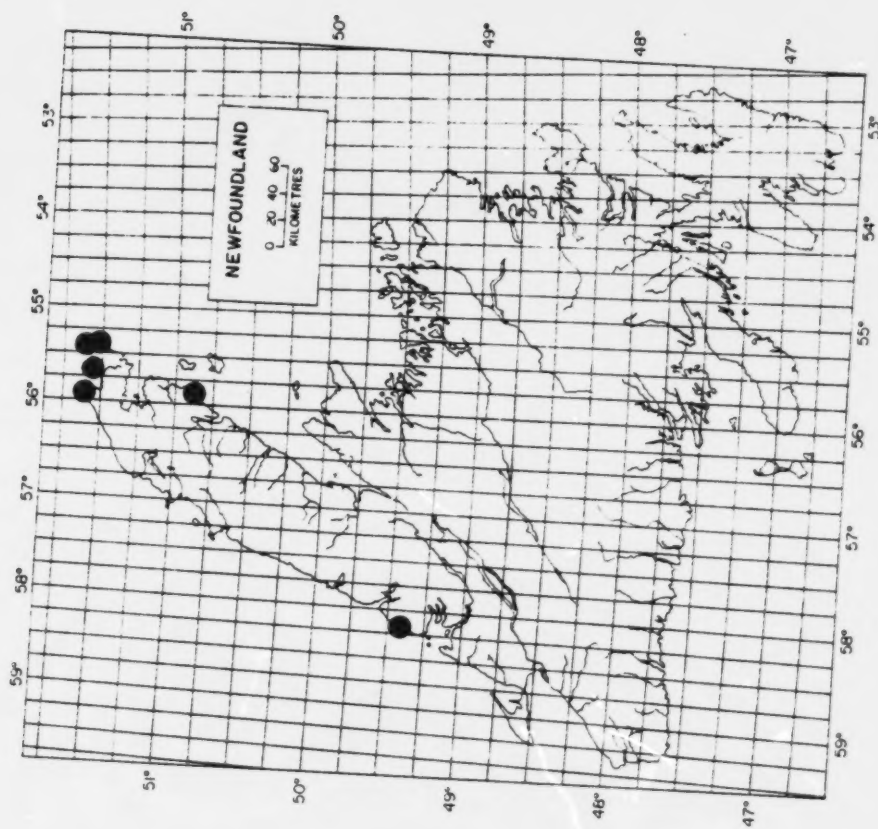
MAP 51: Ranunculus gmelinii



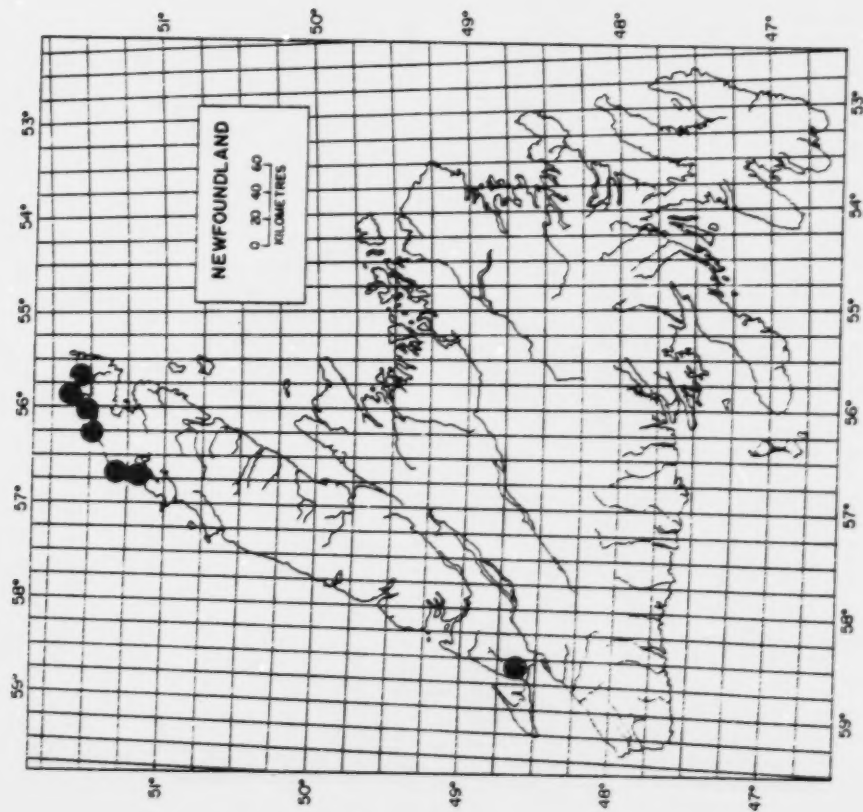
MAP 52: Ranunculus pedatifidus



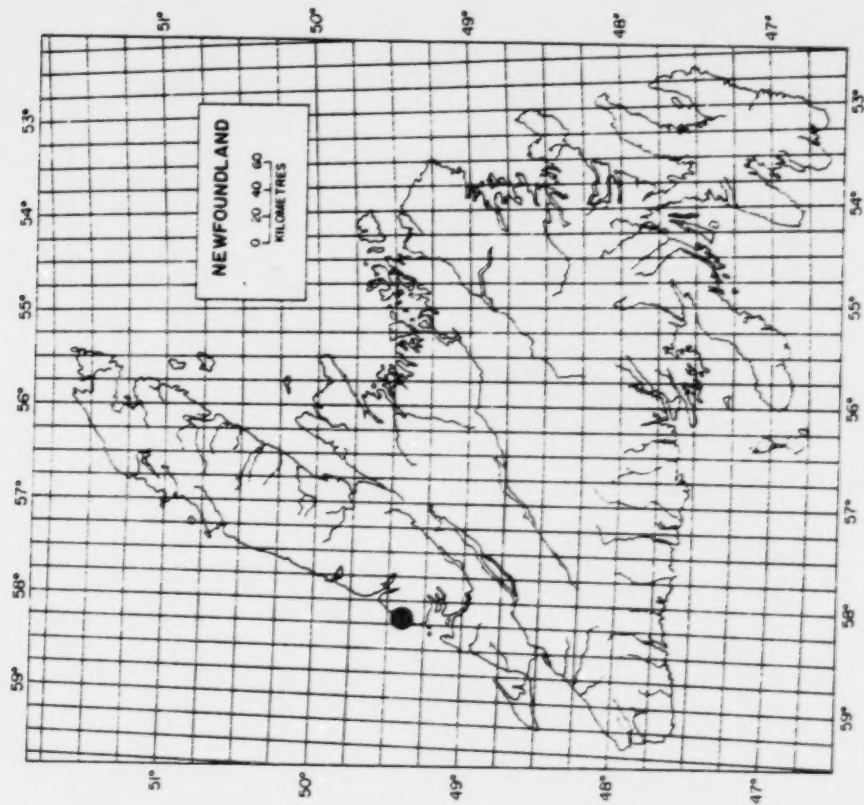
MAP 53: Anemone riparia



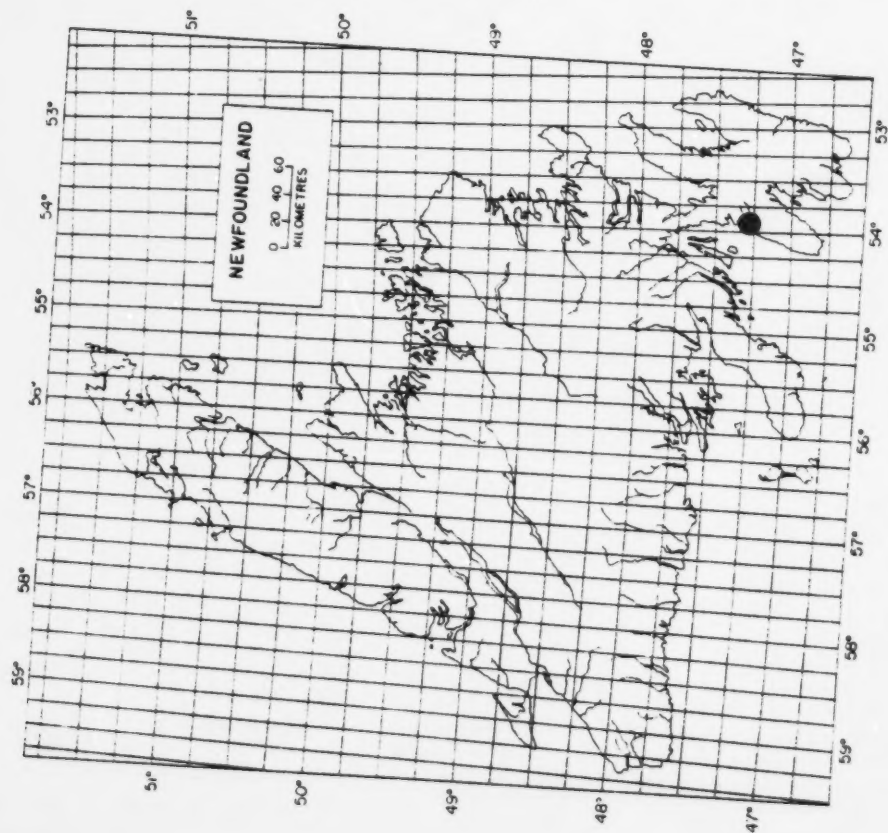
MAP 54: Draba nivalis



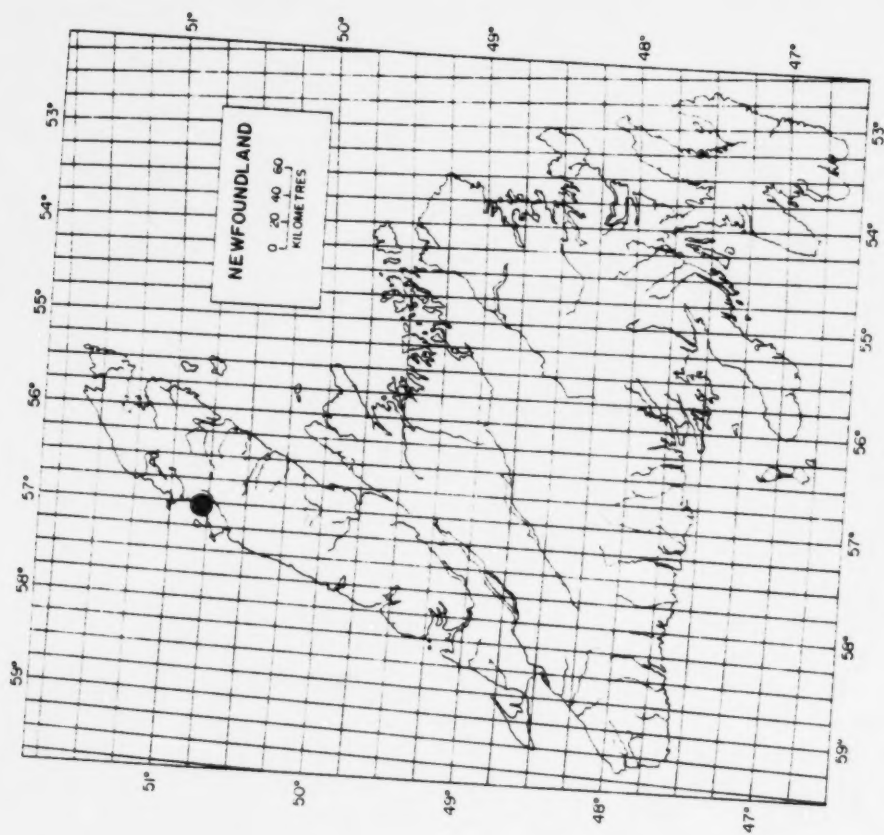
MAP 55: Braya humilis



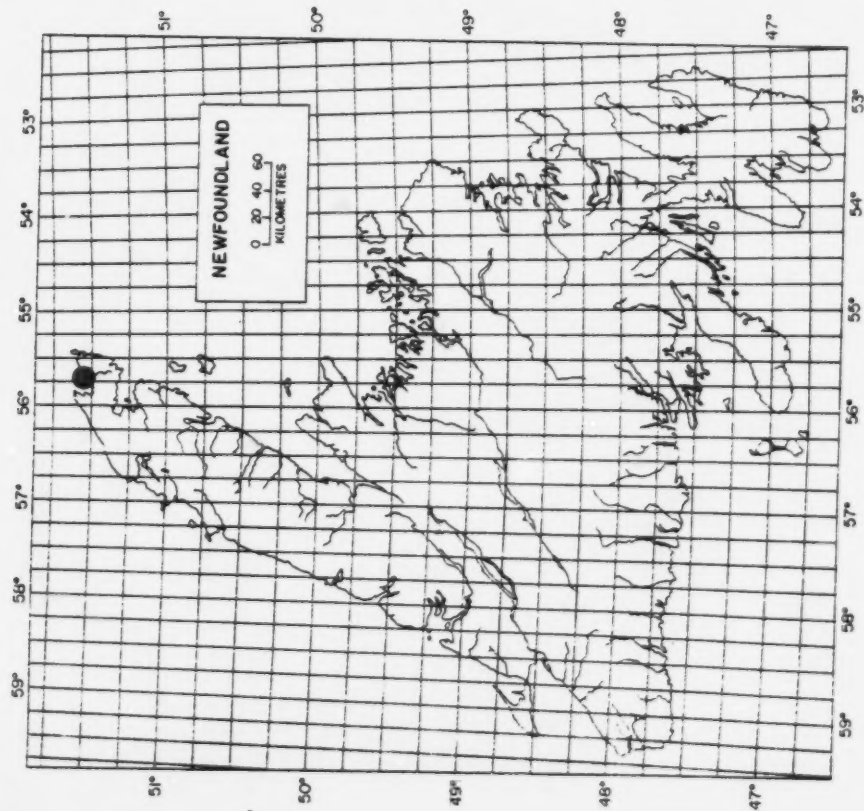
MAP 56: Erysimum coarctatum



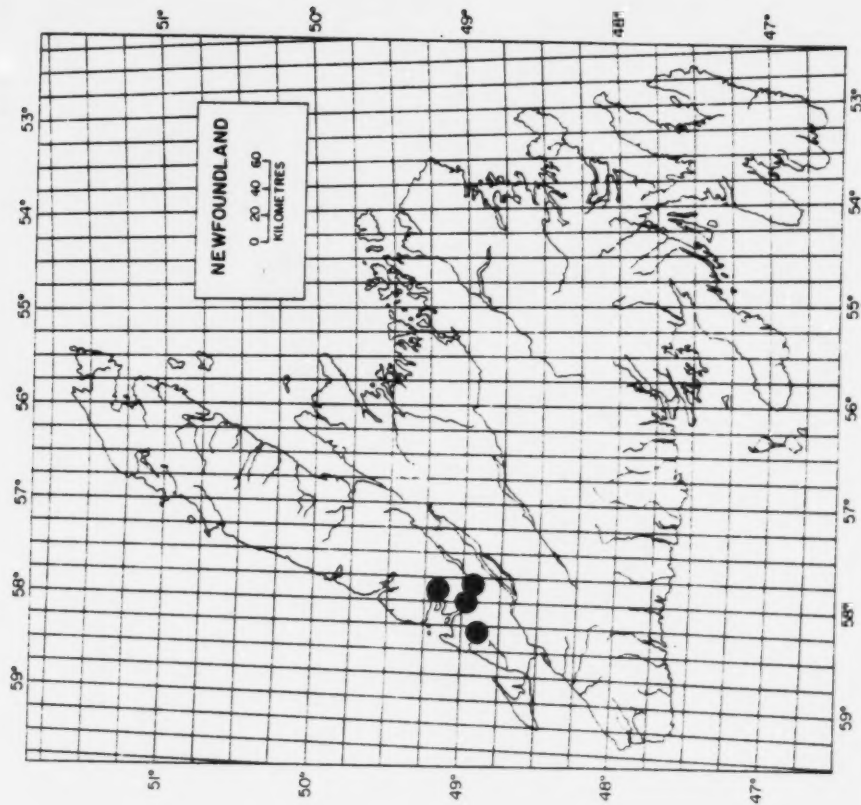
MAP 57: Tillaea aquatica



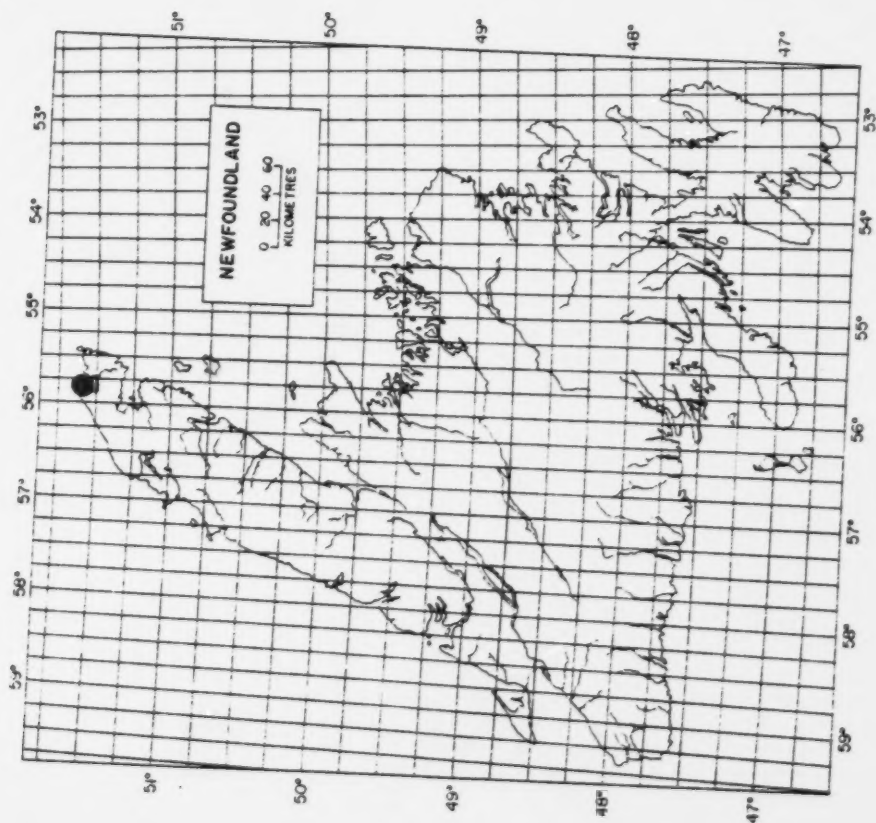
MAP 58: Saxifraga stellaris



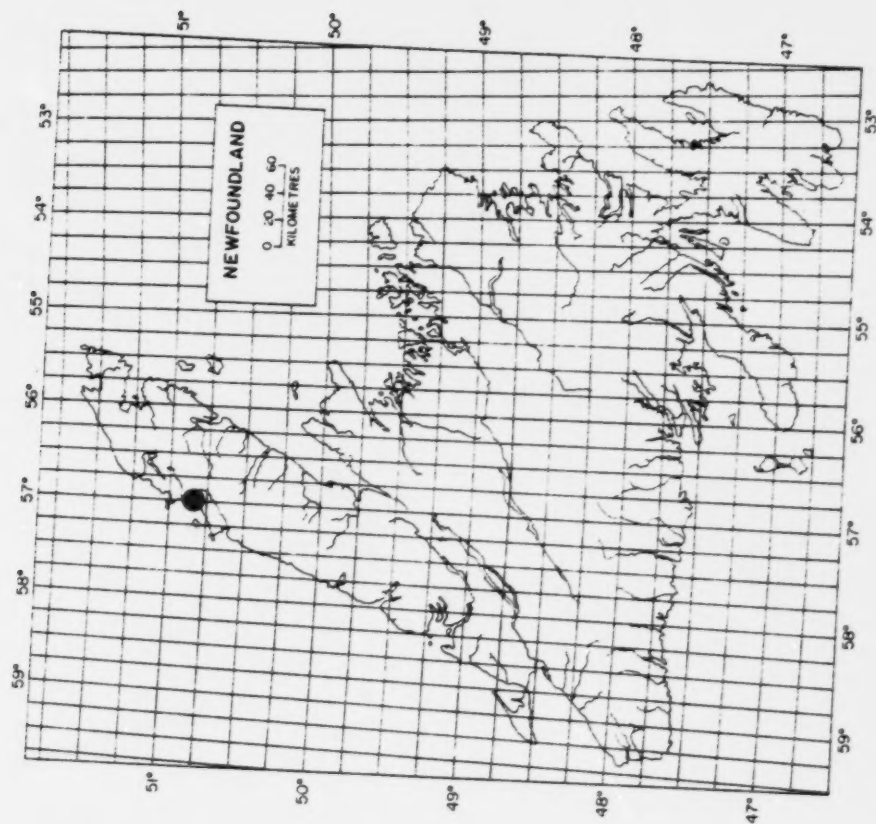
MAP 59: *Potentilla usticapensis*



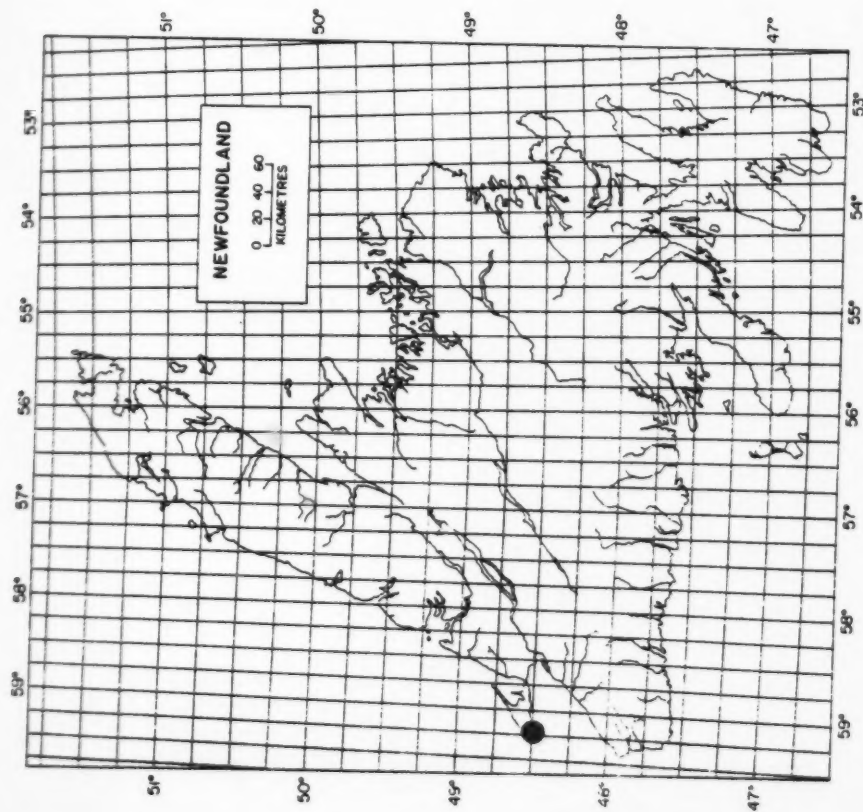
MAP 60: *Dryas drummondii*



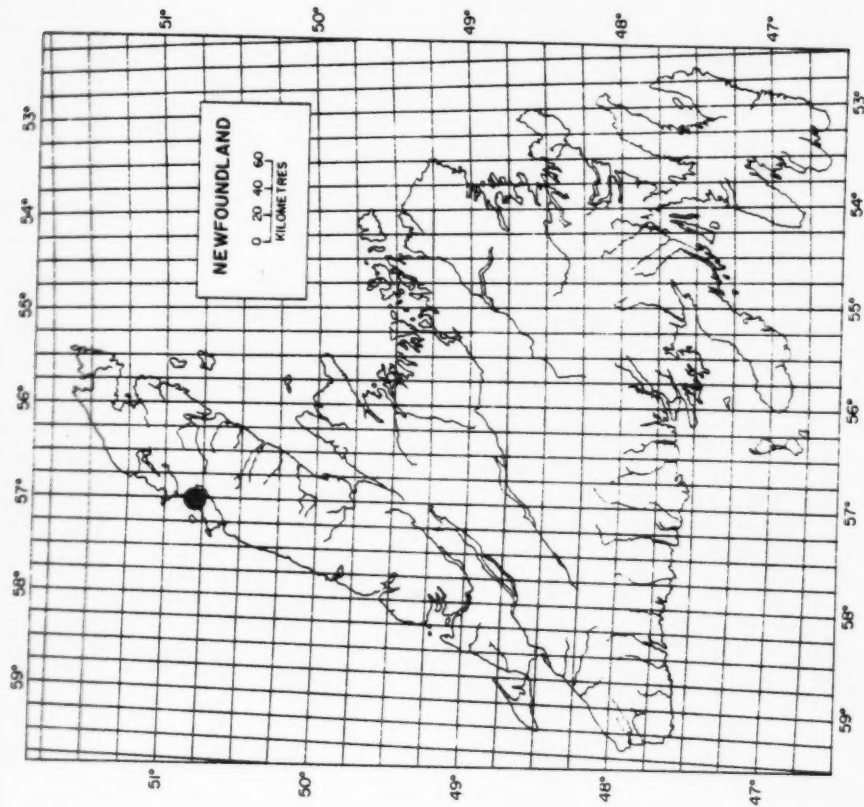
MAP 61: *Astragalus stragulus*



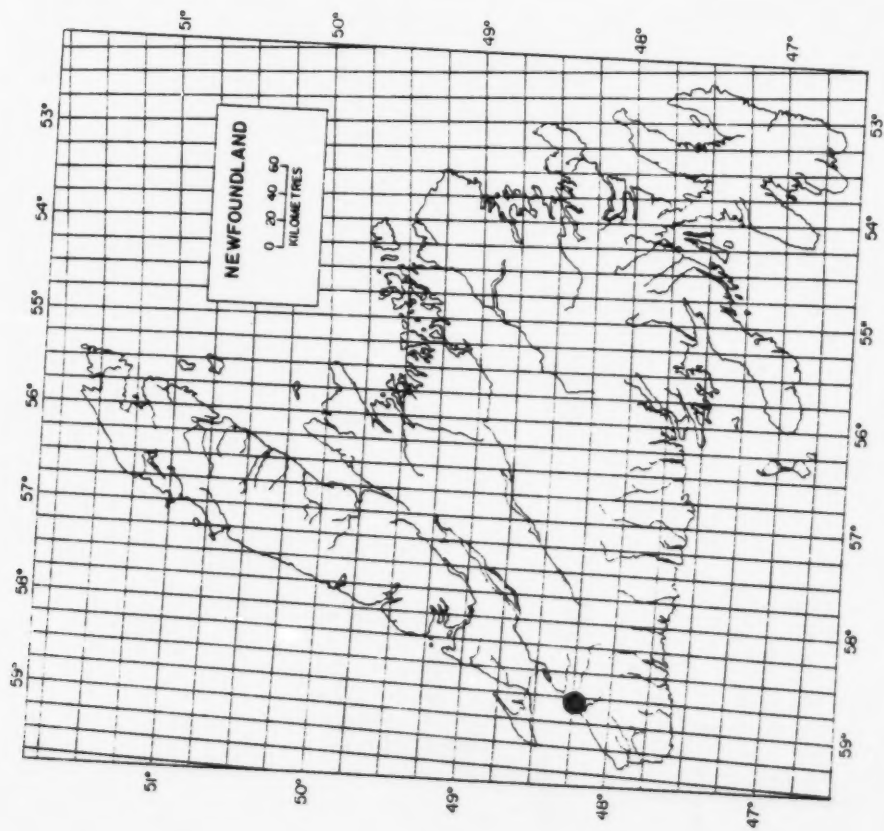
MAP 62: *Astragalus fernaldi*



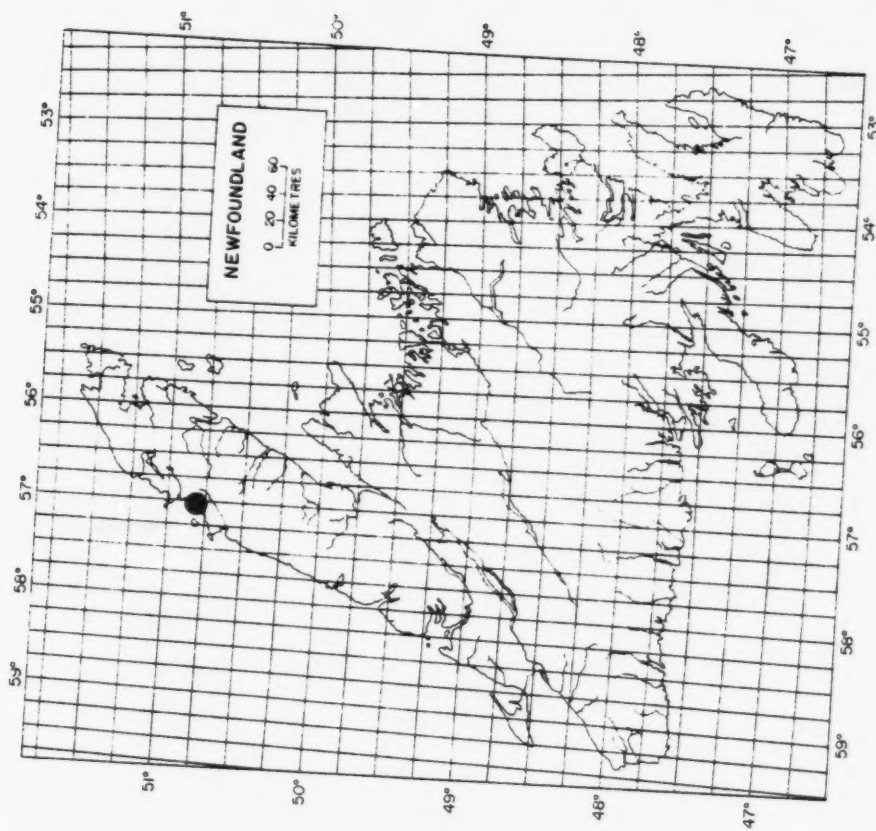
MAP 63: Hedysarum mackenzii



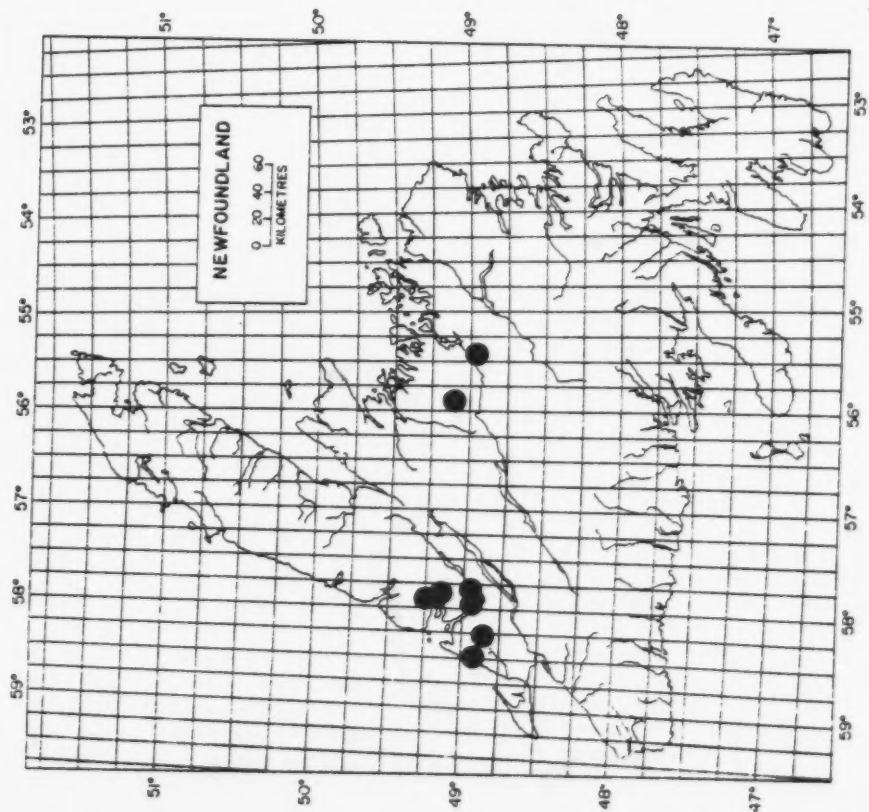
MAP 64: Epilobium scalare



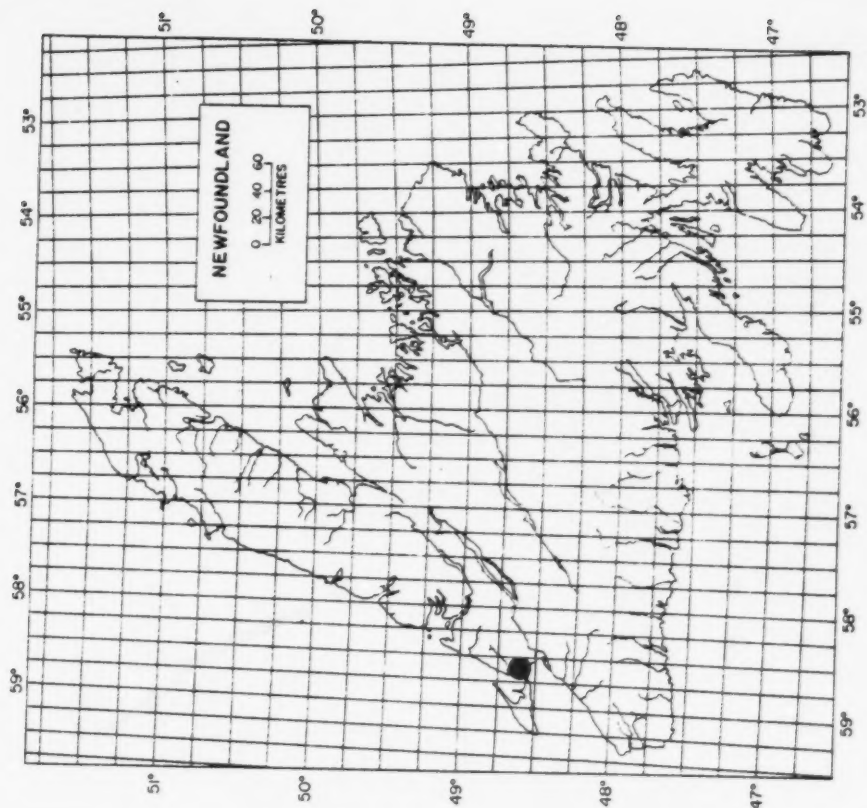
MAP 65: Hydrocotyle americana



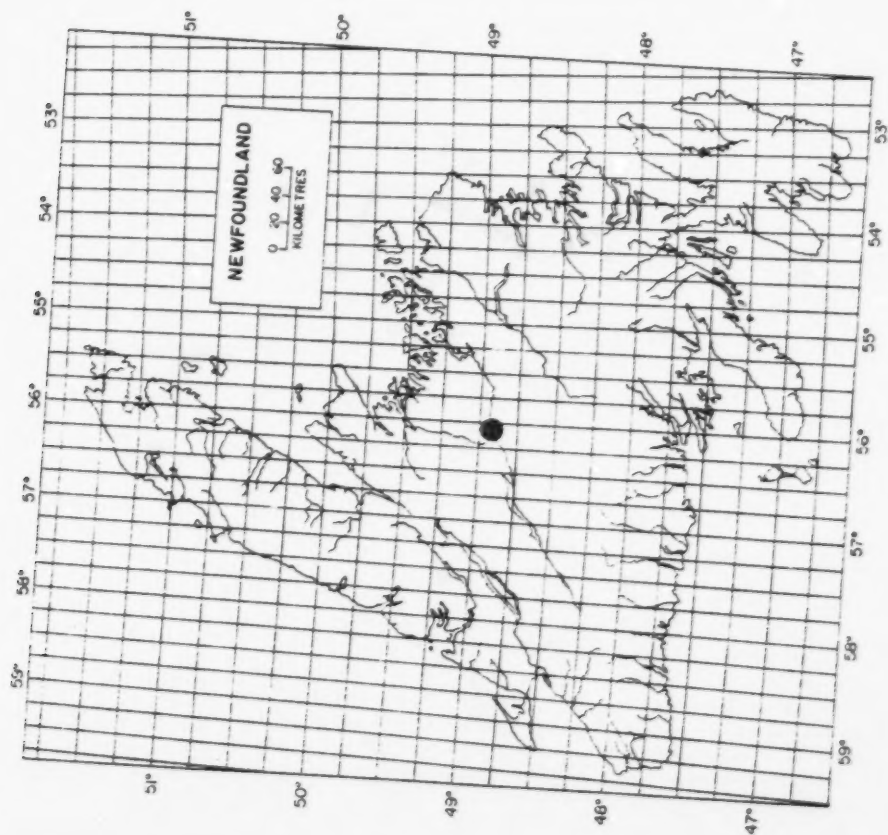
MAP 66: Osmorhiza chilensis



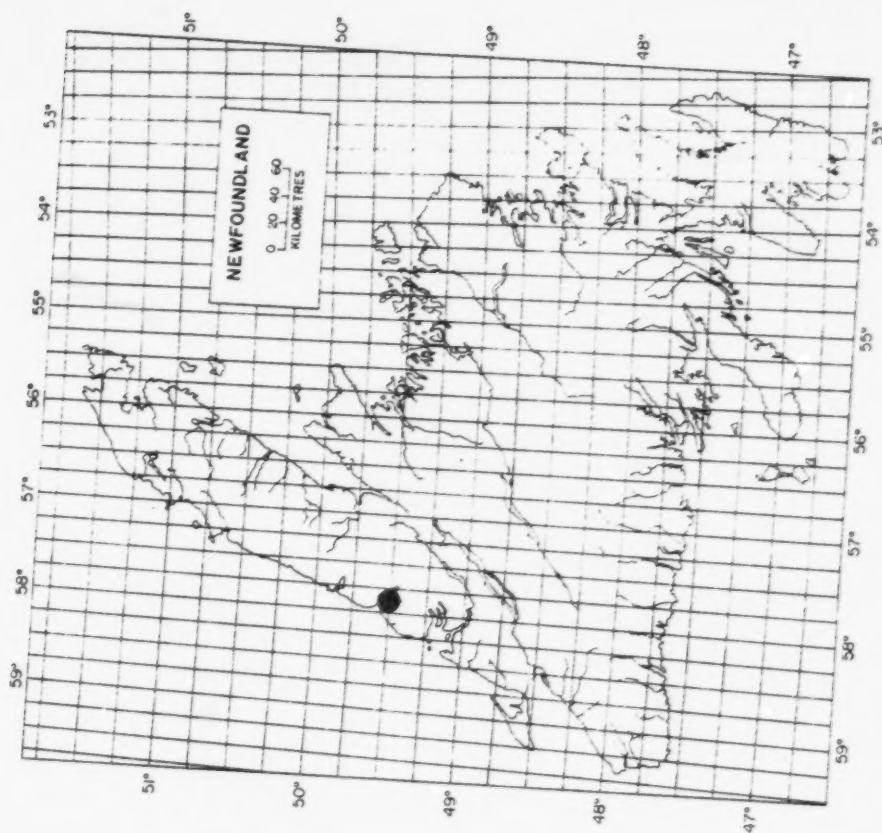
MAP 67: Cornus alternifolia



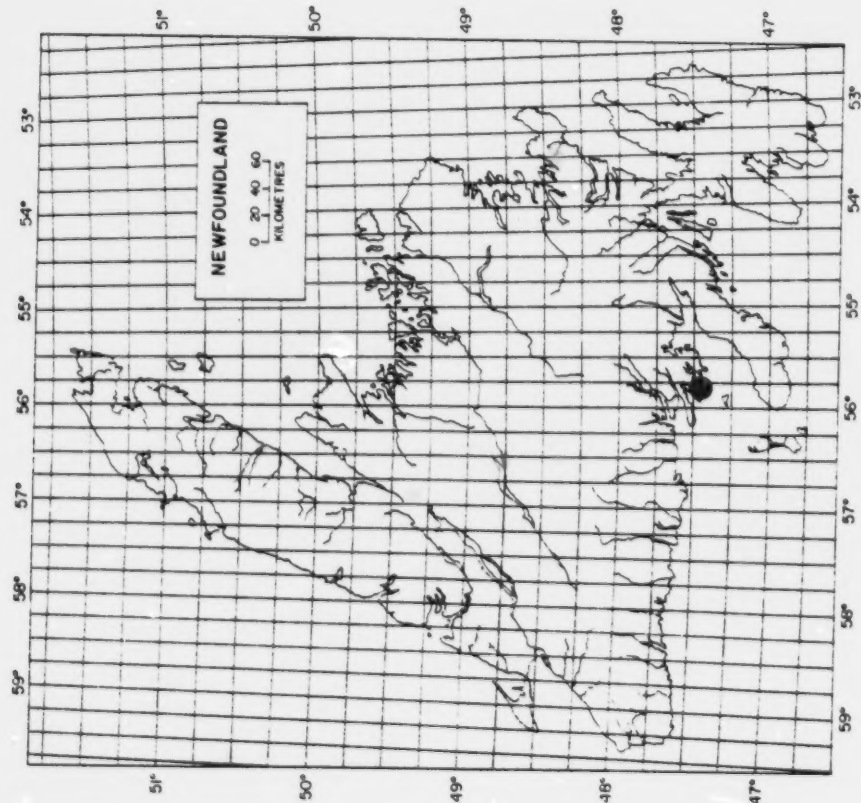
MAP 68: Pyrola grandiflora



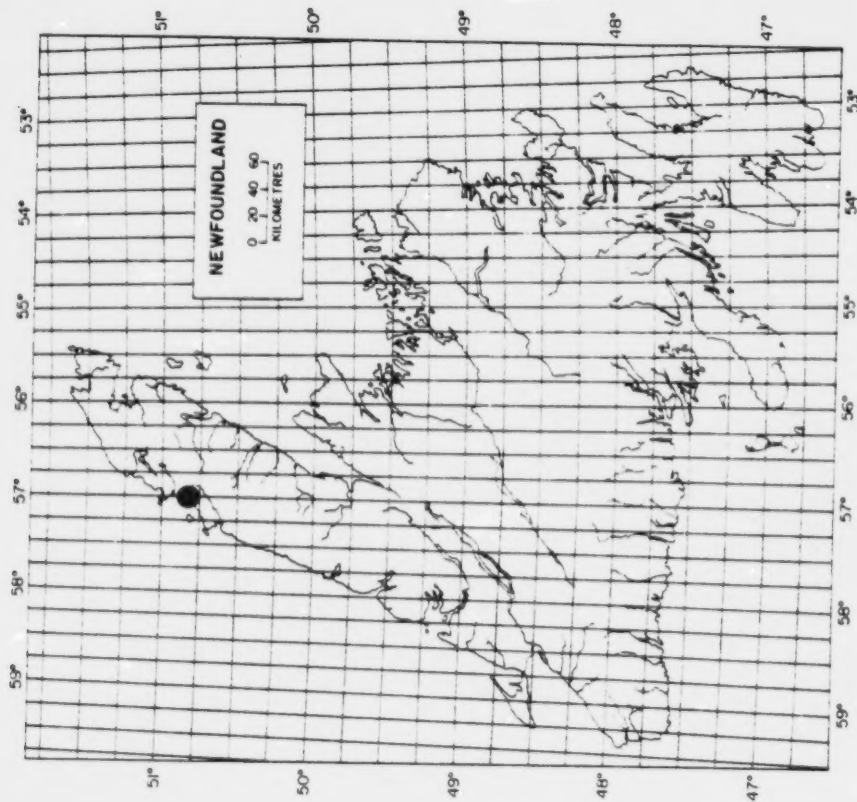
MAP 69: Gaultheria procumbens



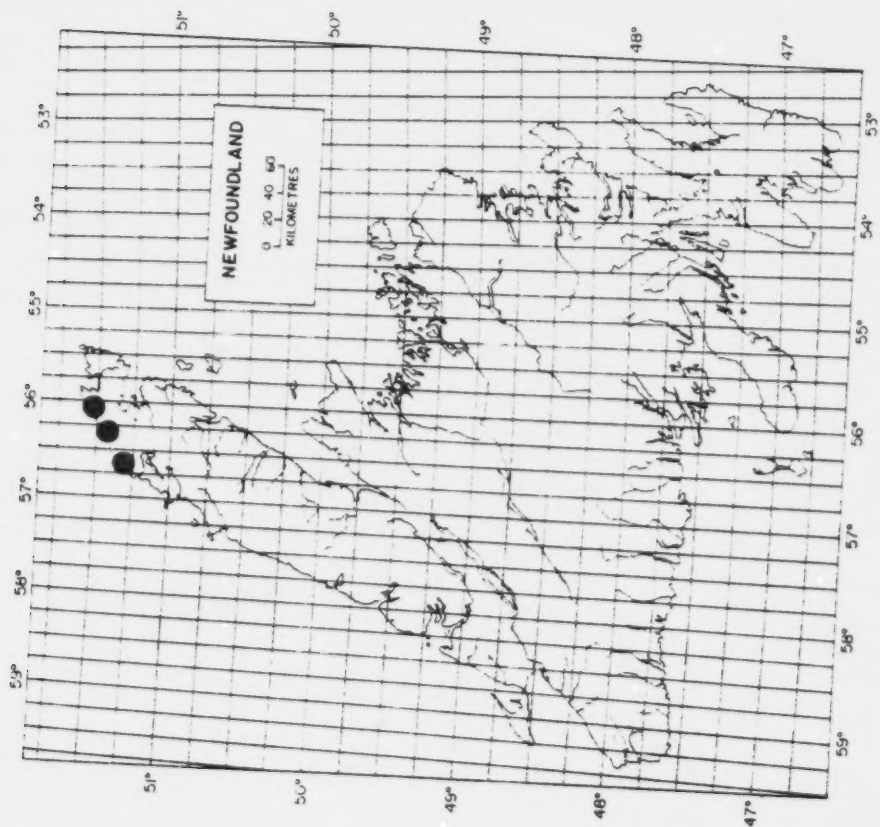
MAP 70: Androsace septentrionalis



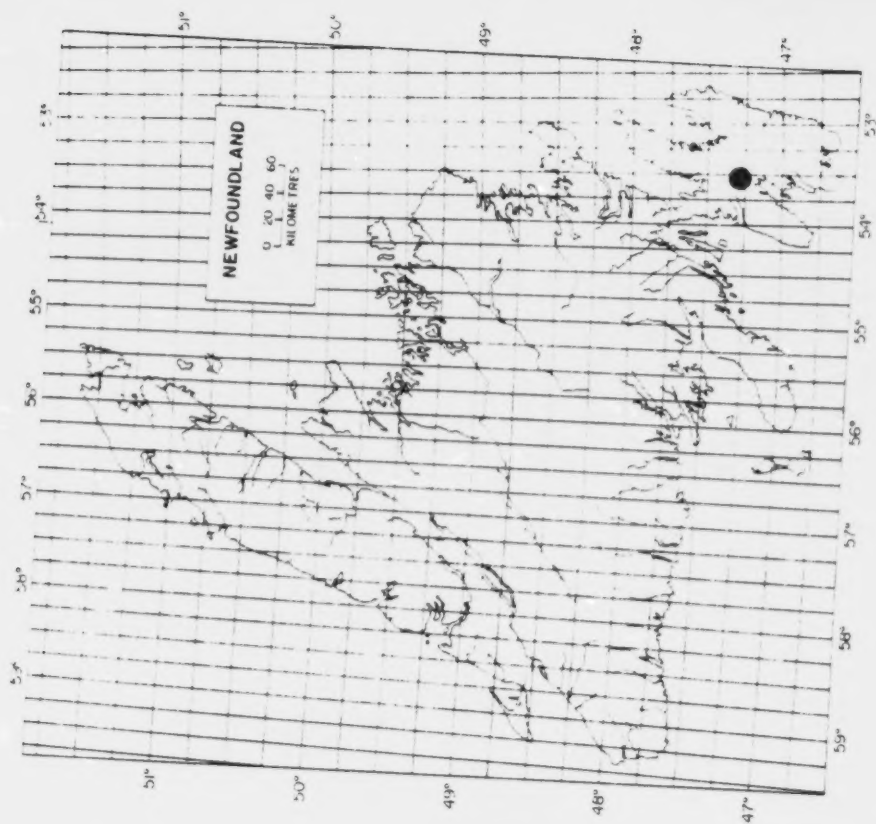
MAP 71: Limosella aquatica



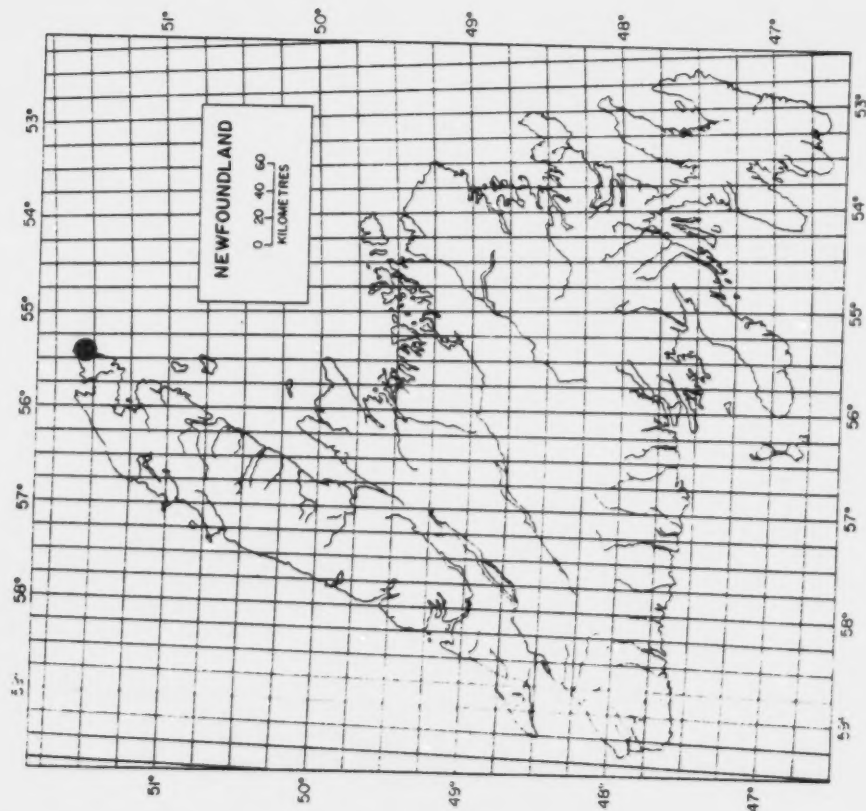
MAP 72: Veronica alpina var. terrae-novae



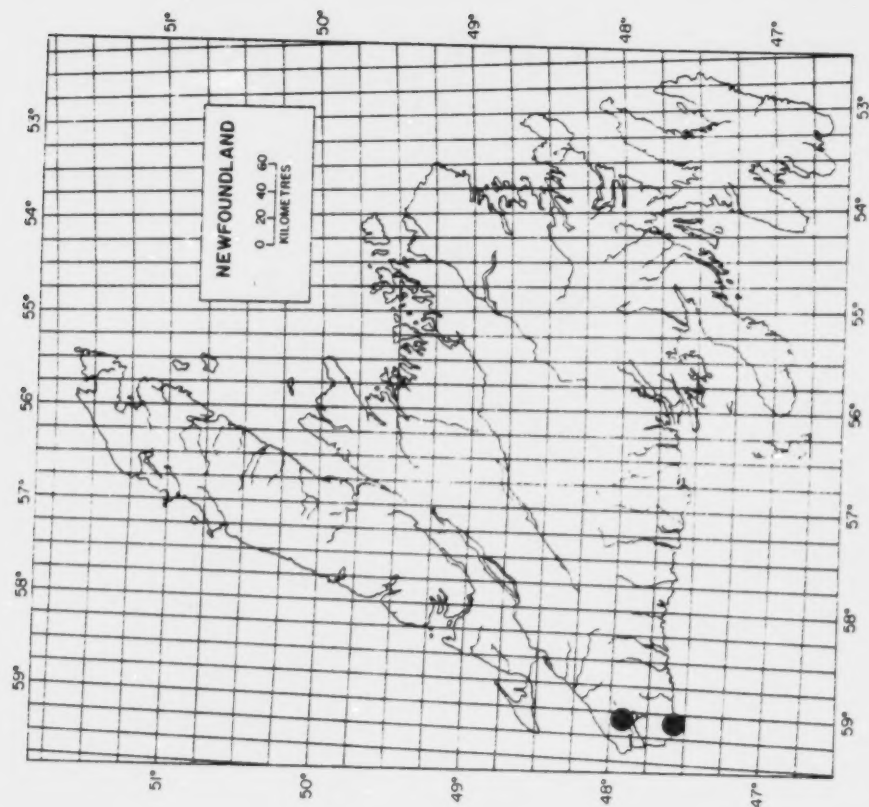
MAP 73: Pedicularis flammea



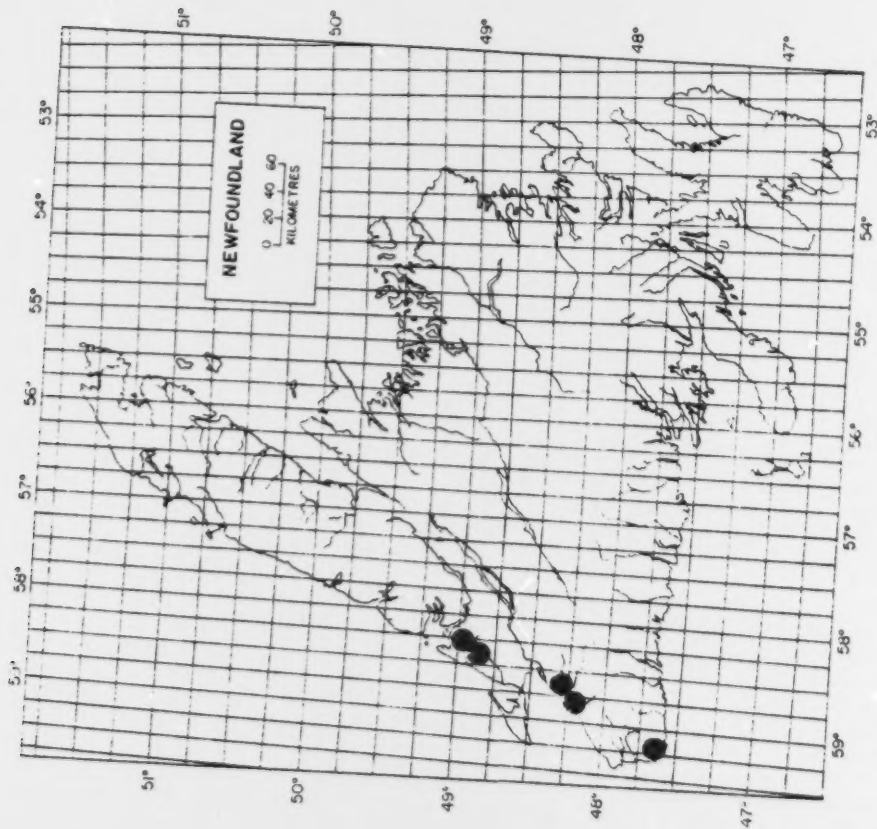
MAP 74: Utricularia purpurea



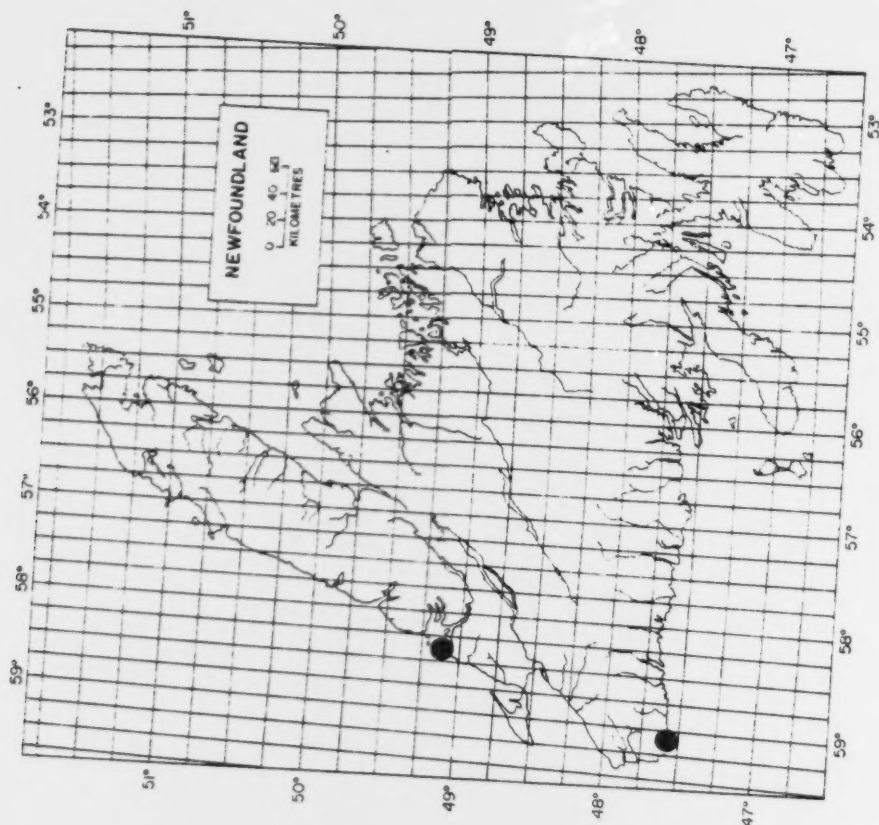
MAP 75: Galium brandegei



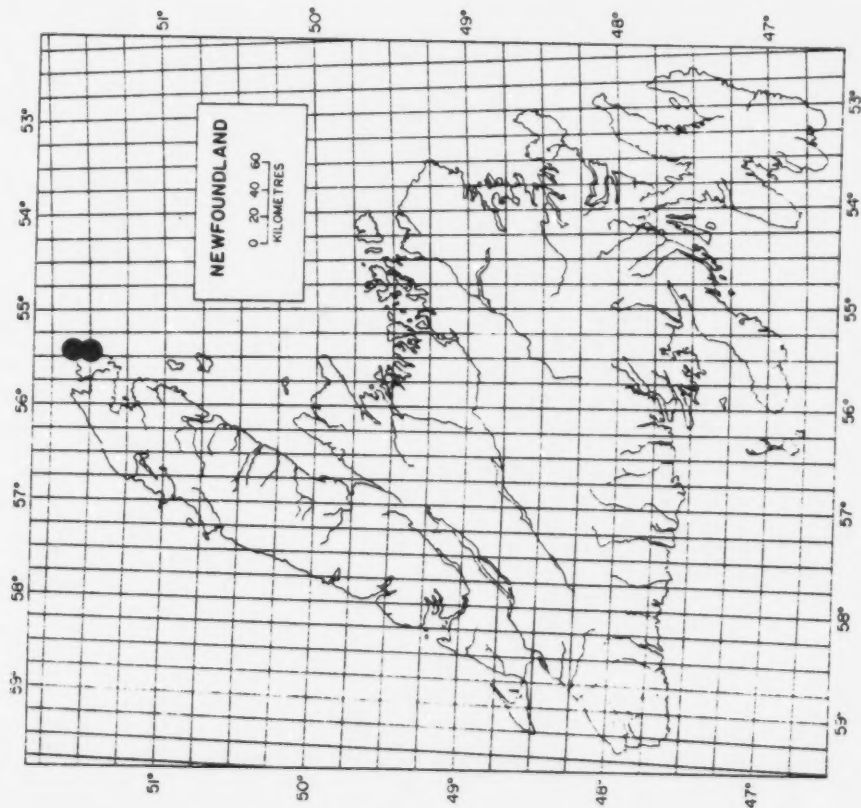
MAP 76: Mitchella repens



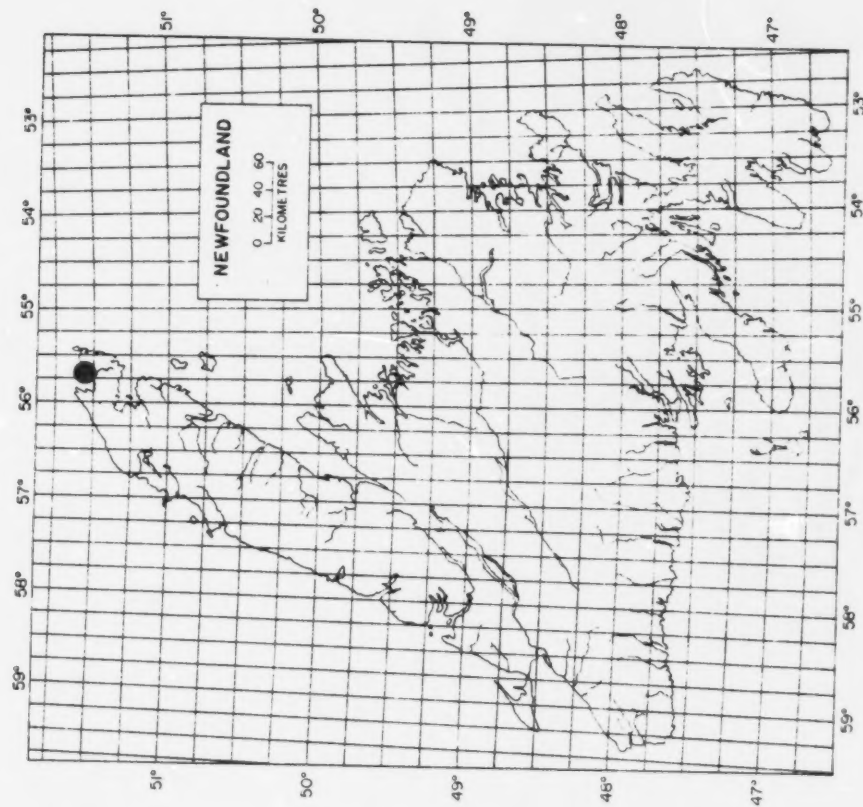
MAP 77: Aster simplex



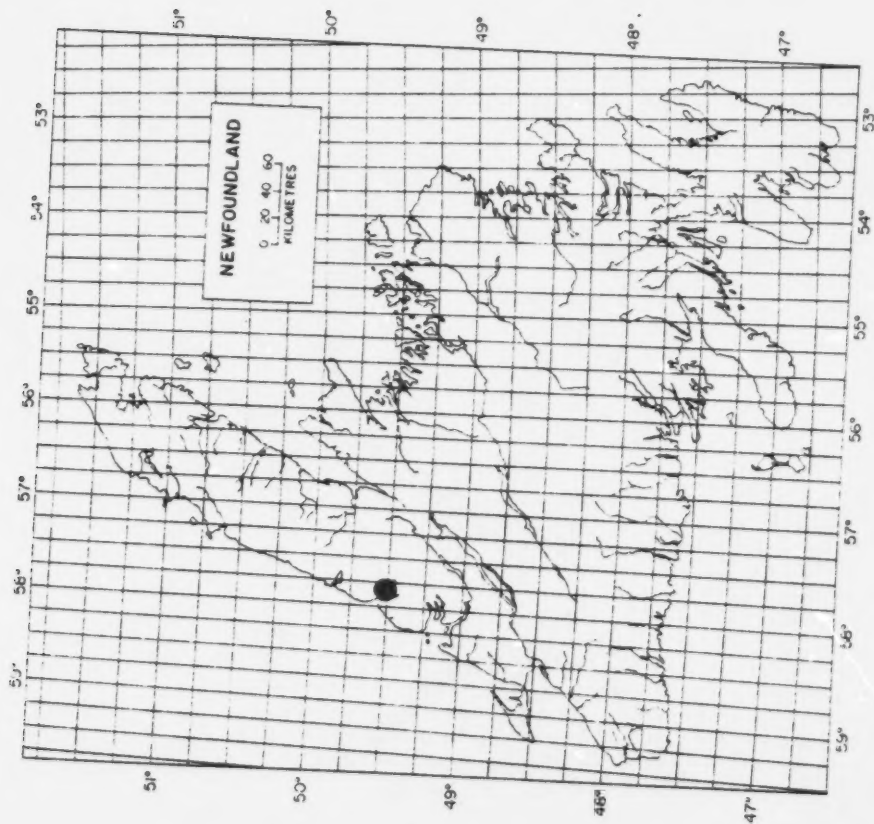
MAP 78: Aster acuminatus



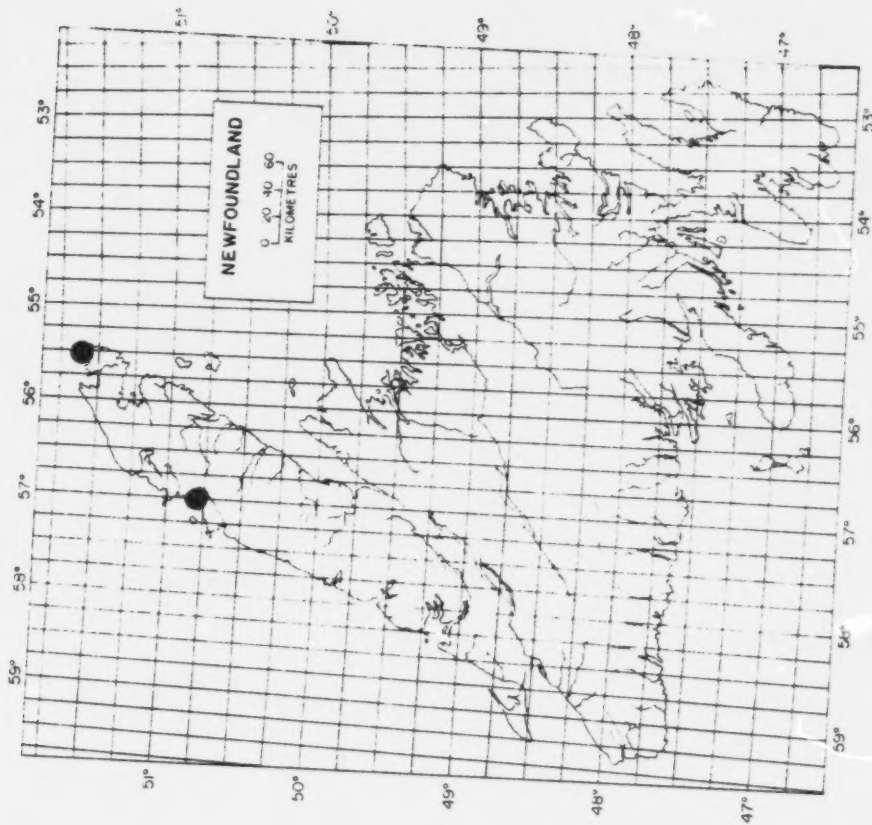
MAP 79: Erigeron elatus
var. oligocephalus



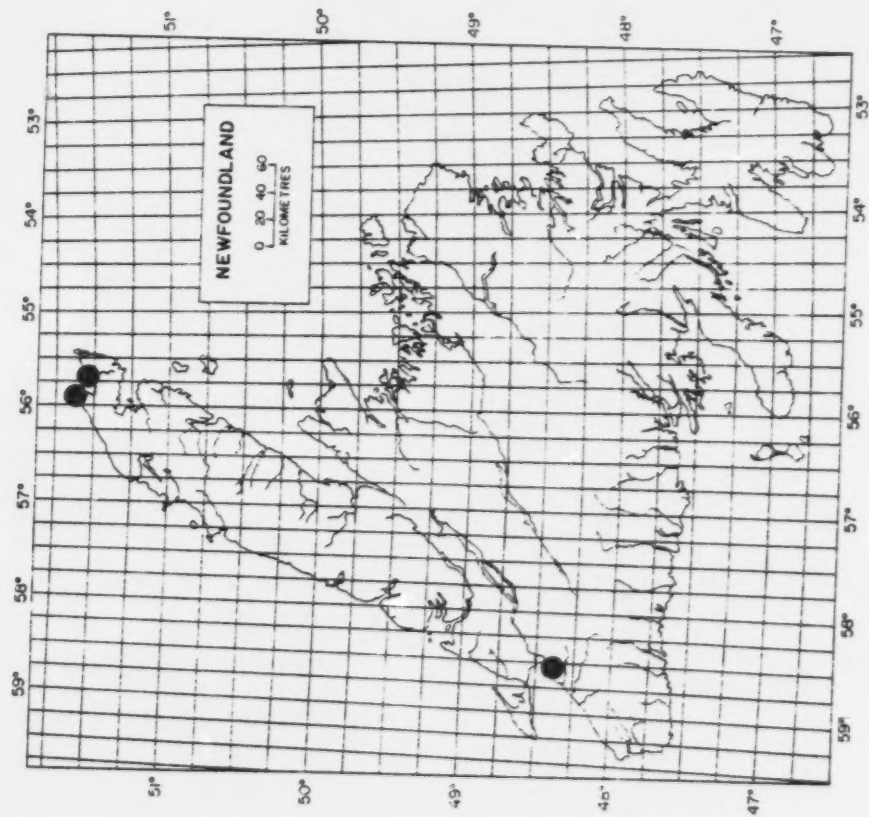
MAP 80: Antennaria appendiculata



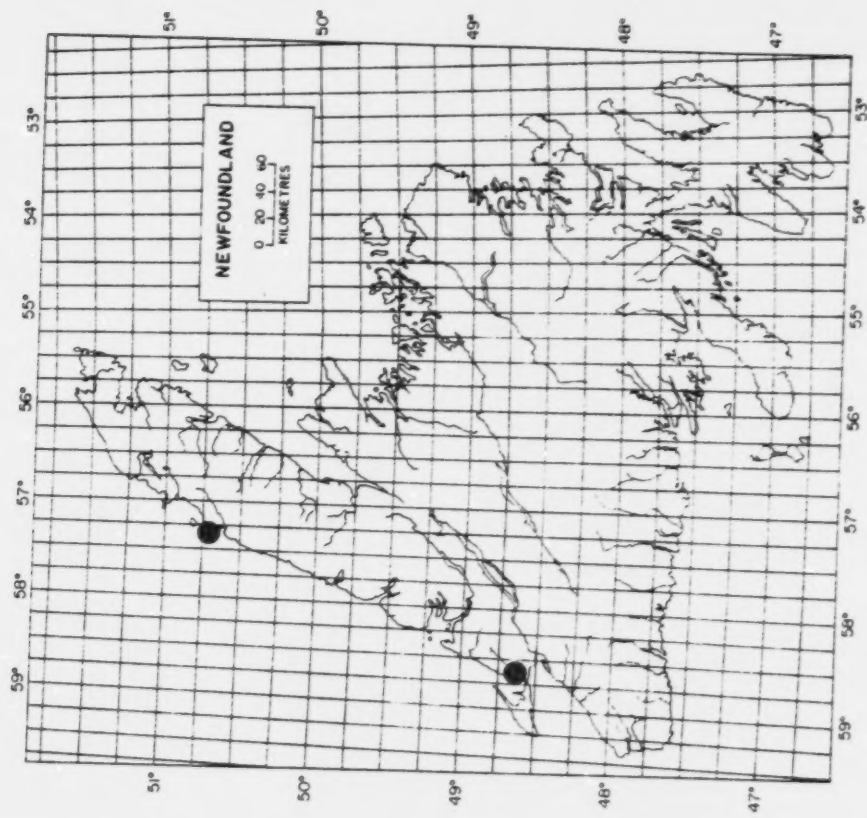
MAP 81: Gnaphalium supinum



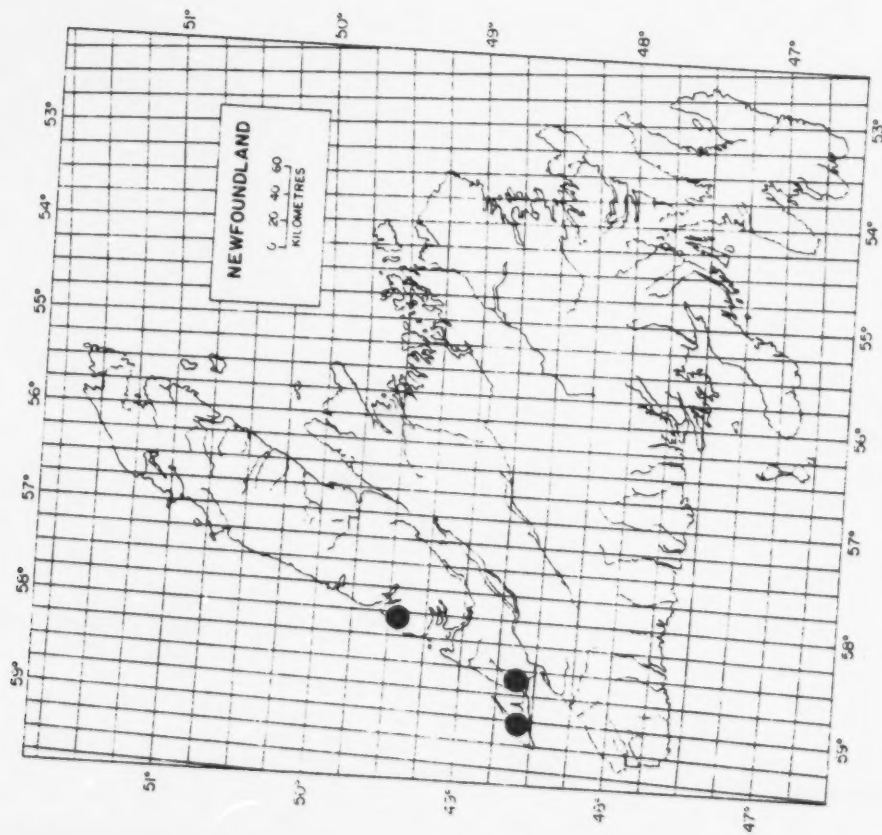
MAP 82: Gnaphalium norvegicum



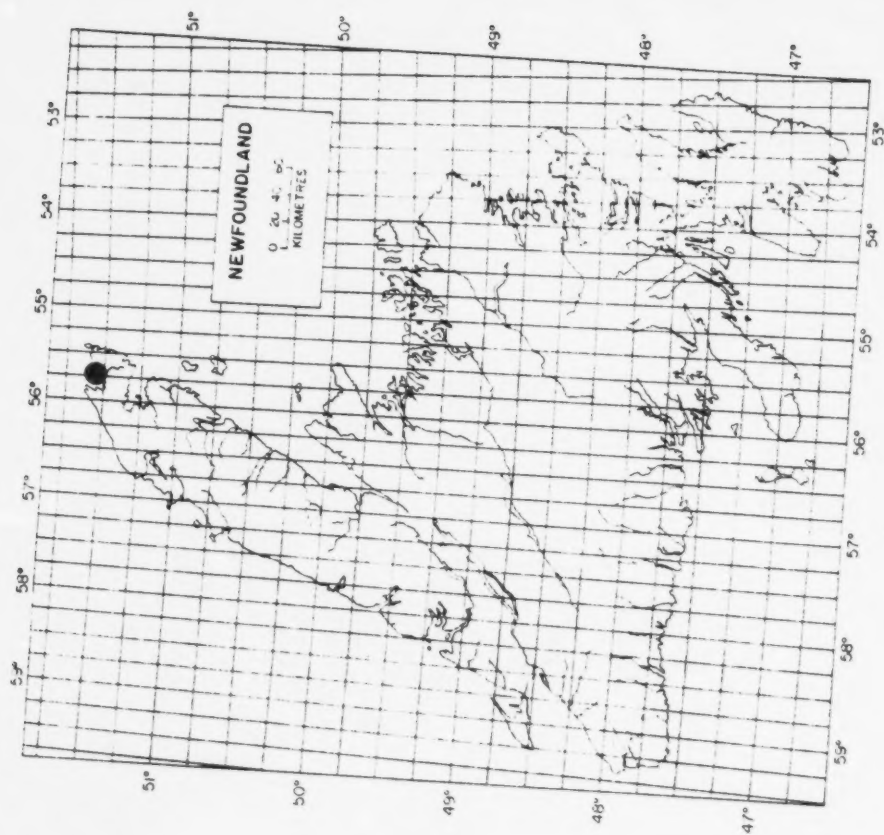
MAP 83: Arnica plantaginea



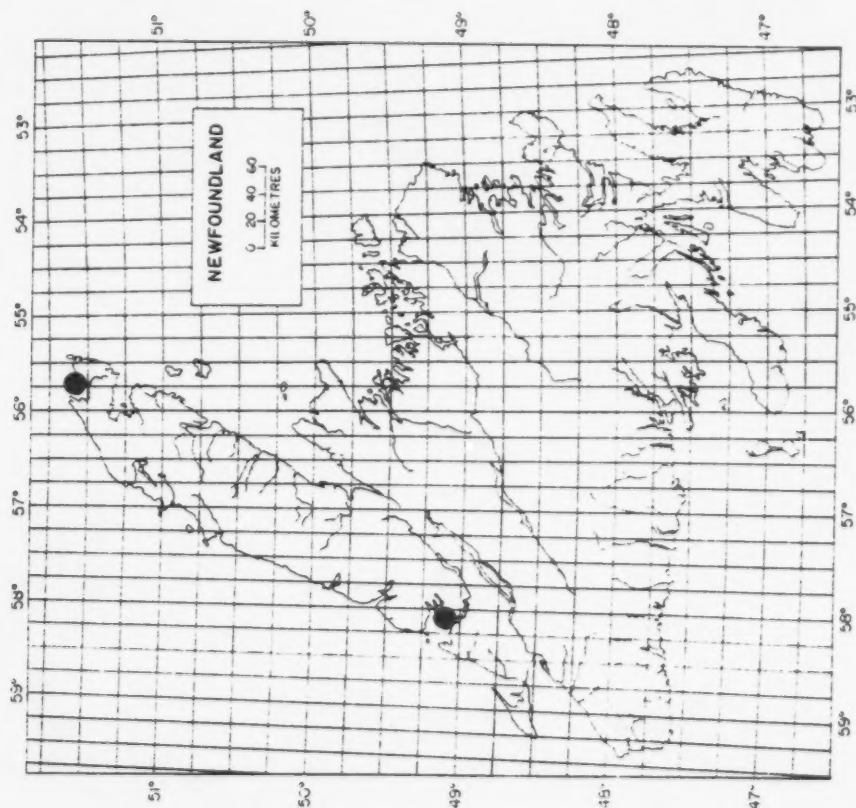
MAP 84: Arnica tomentosa



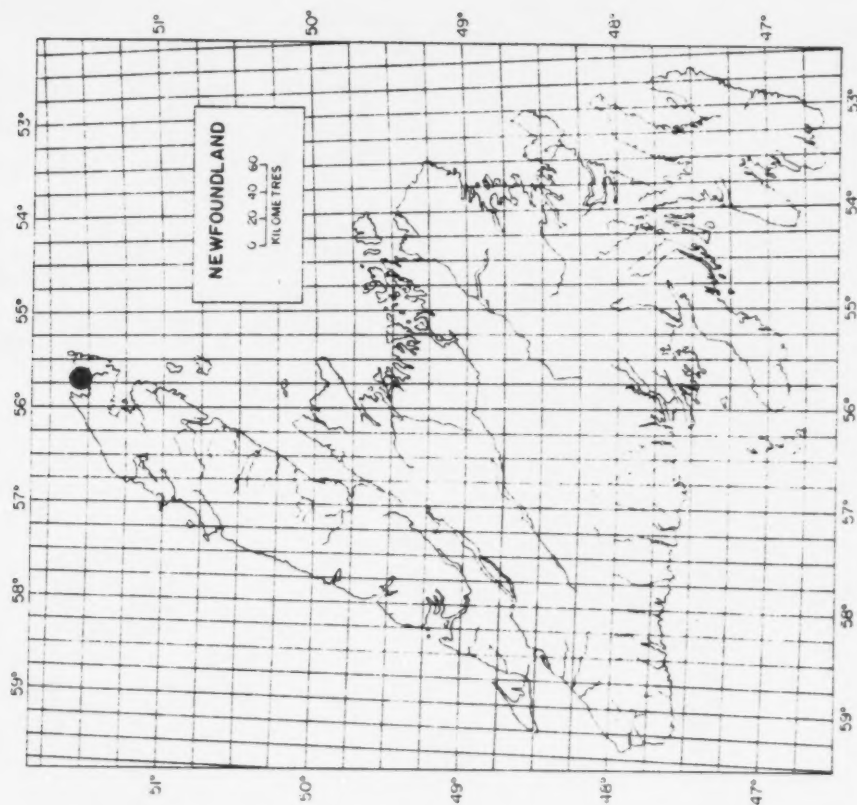
MAP 85: Senecio resedifolius



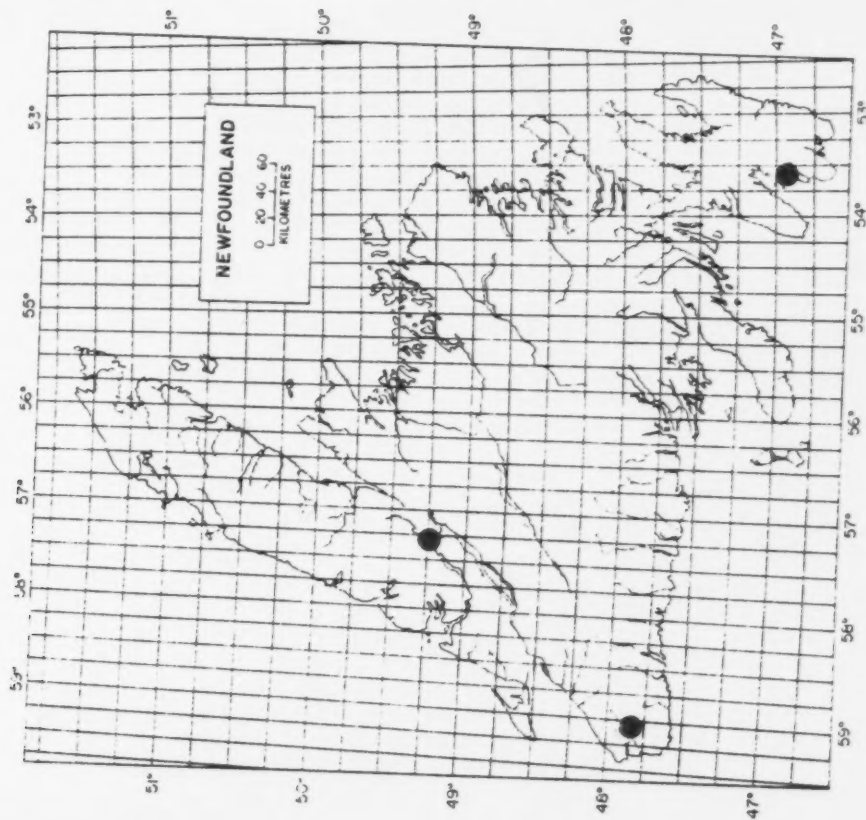
MAP 86: Taraxacum phymatocarpum



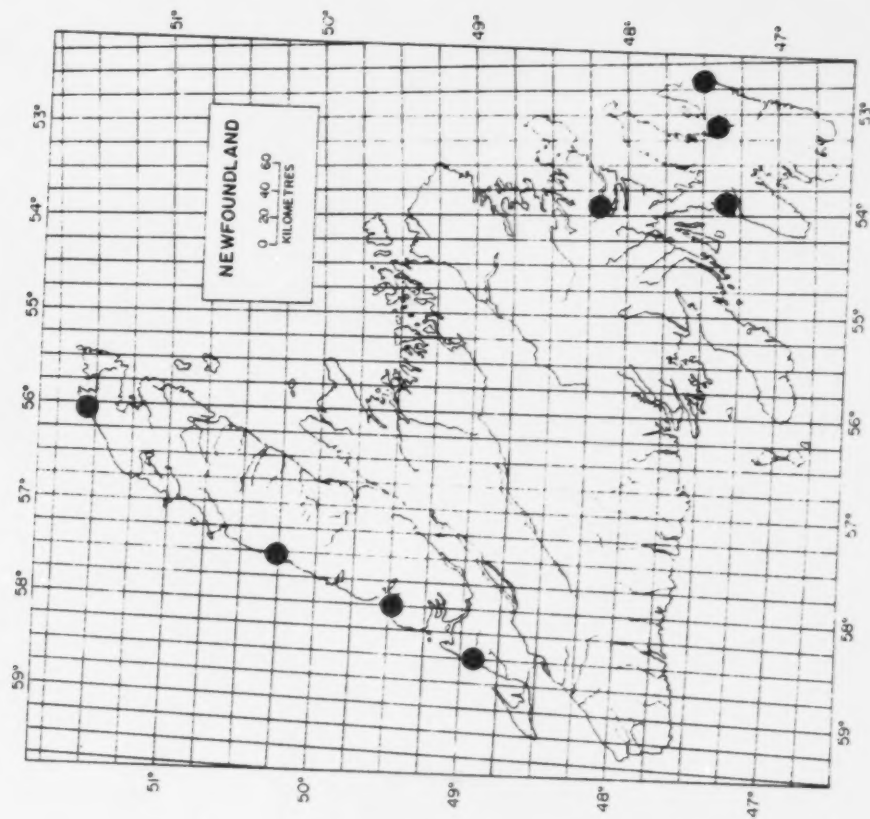
MAP 87: Taraxacum laurentianum



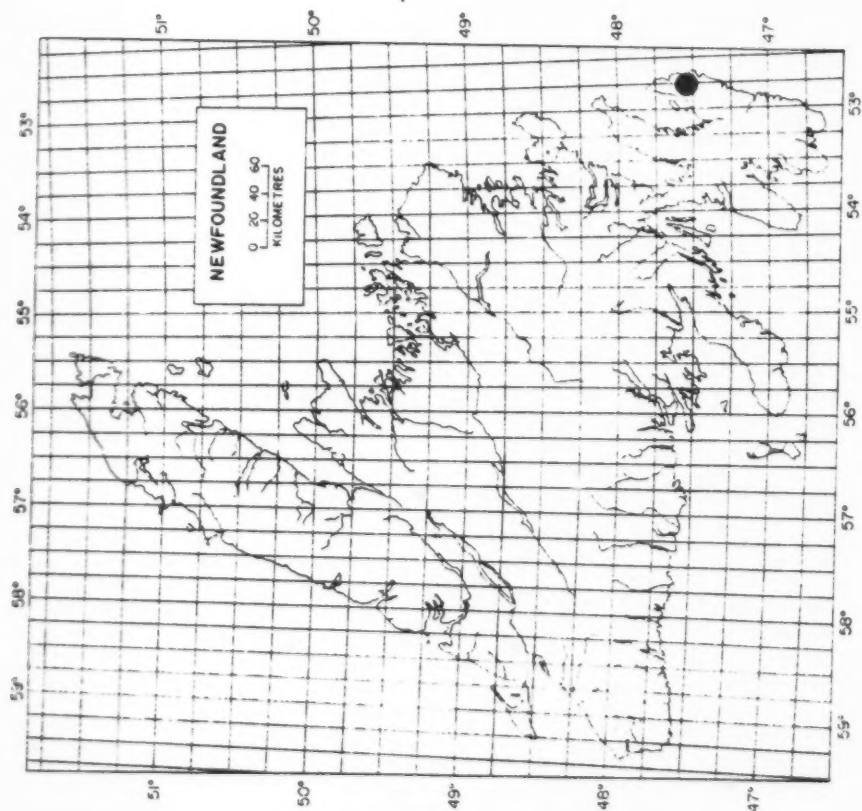
MAP 88: Crepis nana



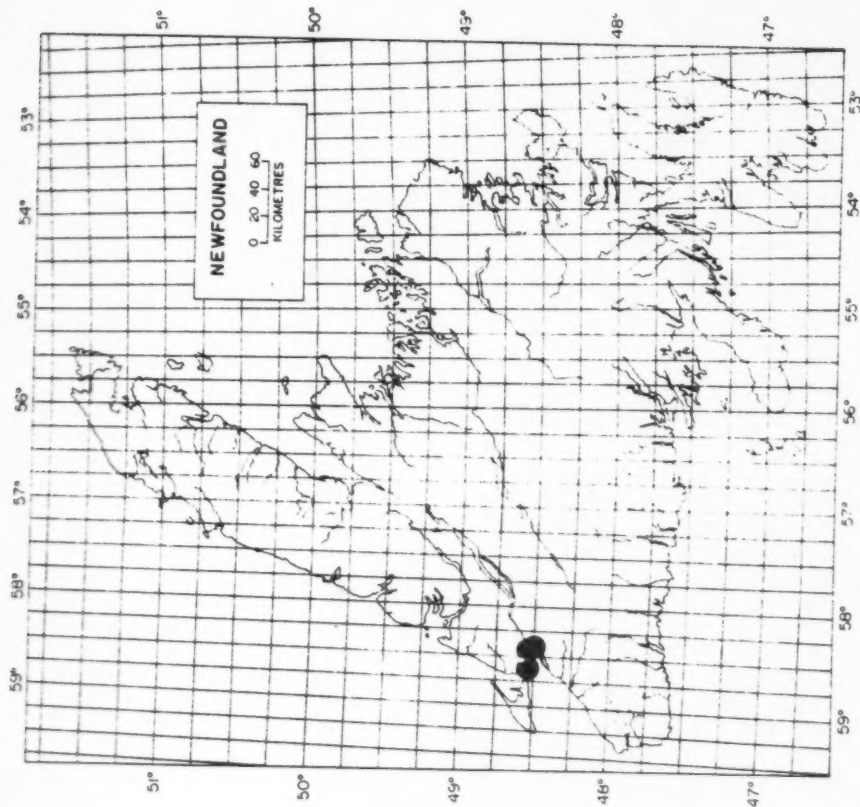
MAP 89: Alosa pseudoharengus



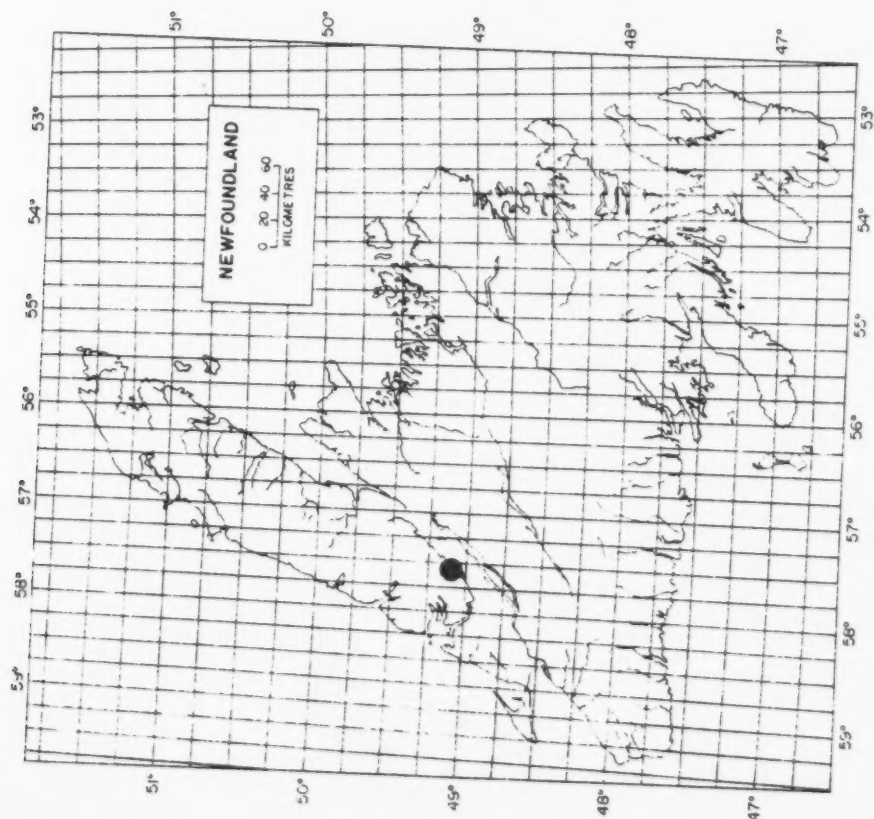
MAP 90: Salmo gairdneri



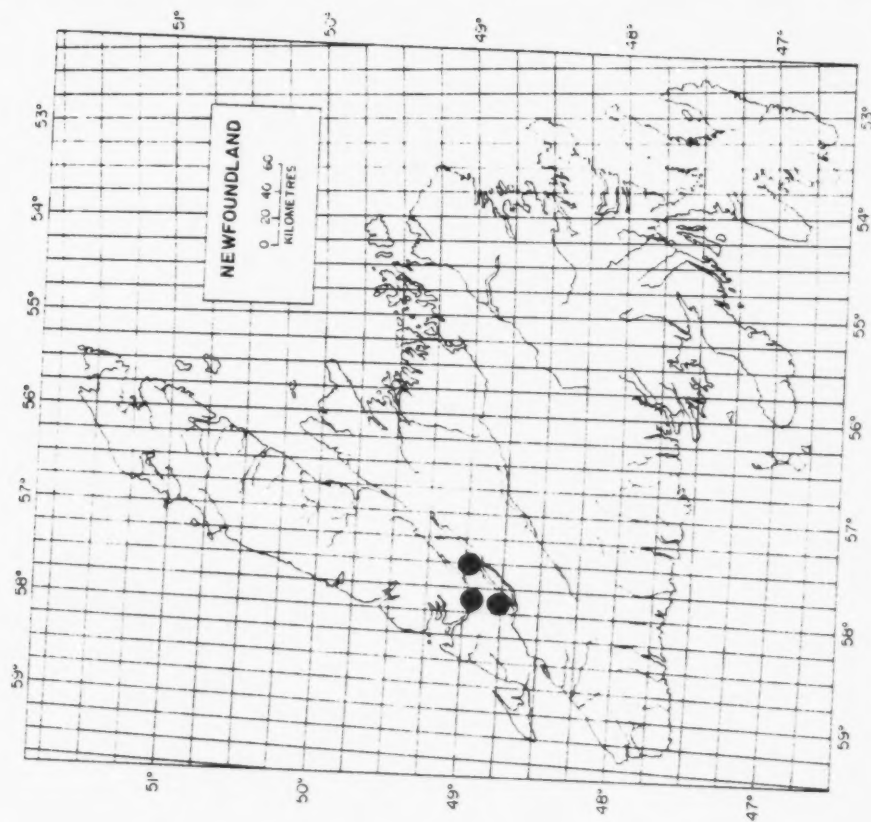
MAP 91: Coregonus clupeaformis



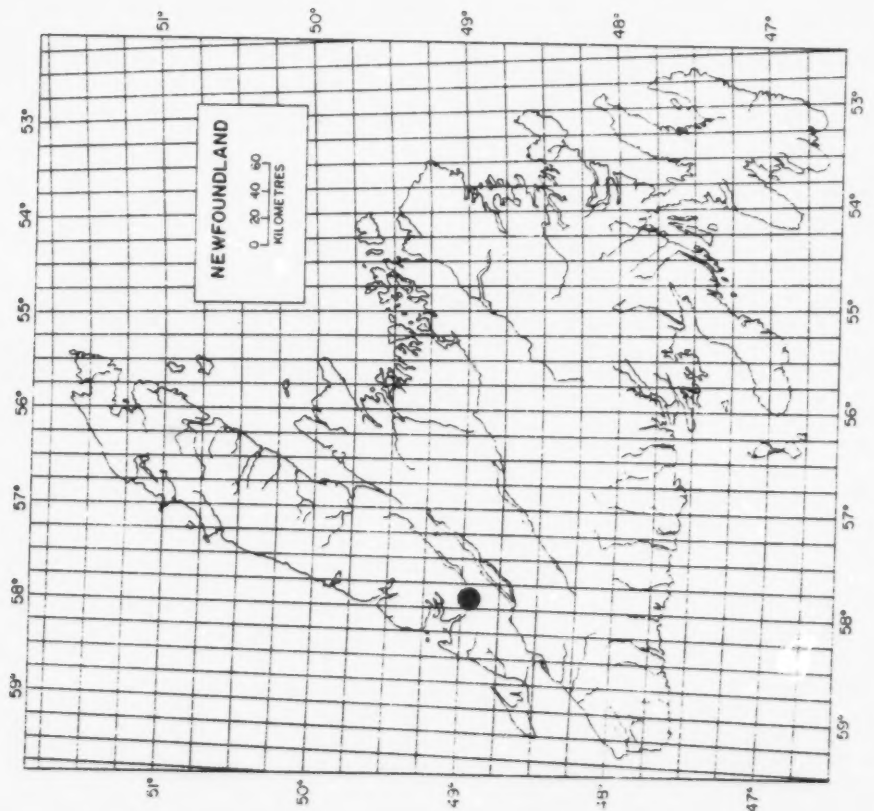
MAP 92: Fundulus diaphanus



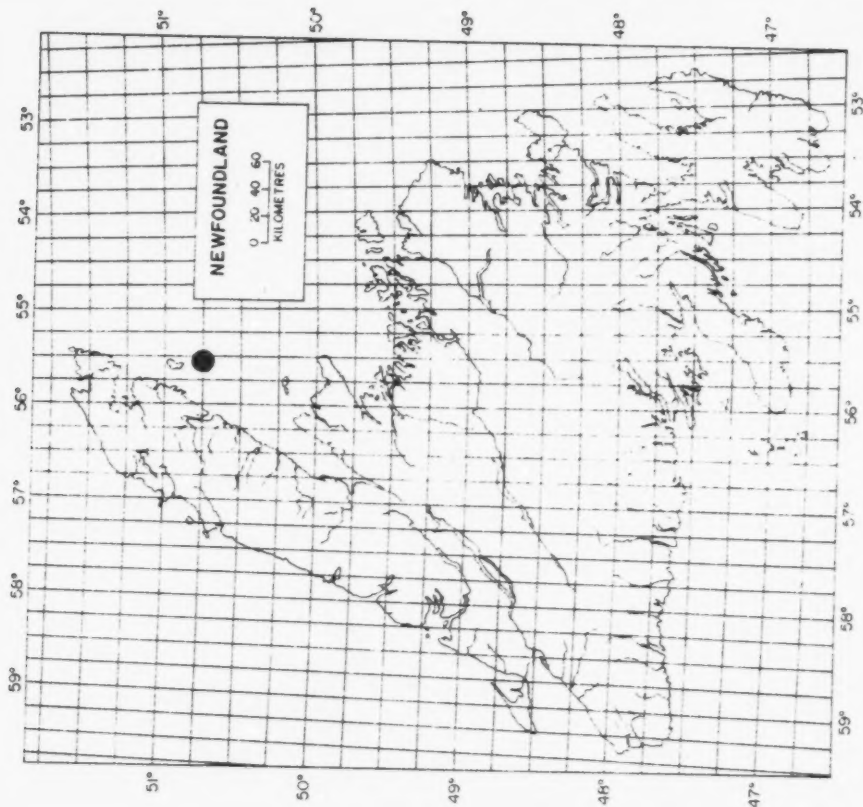
MAP 93: Microgadus tomcod



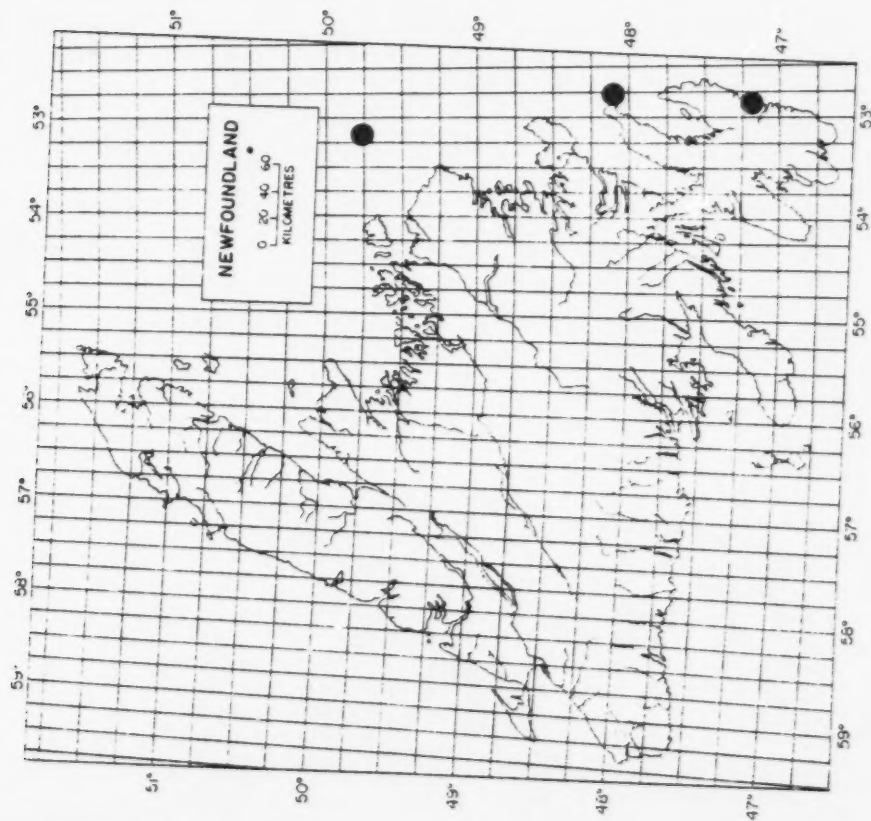
MAP 94: Pseudacris triseriata triseriata



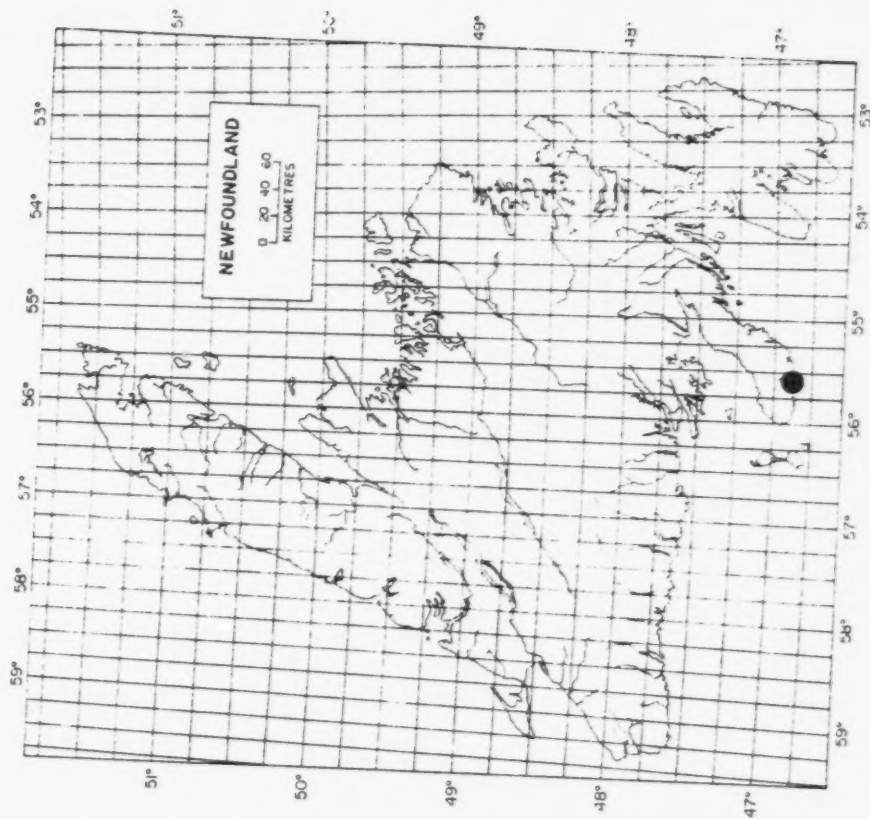
MAP 95: Rana pipiens



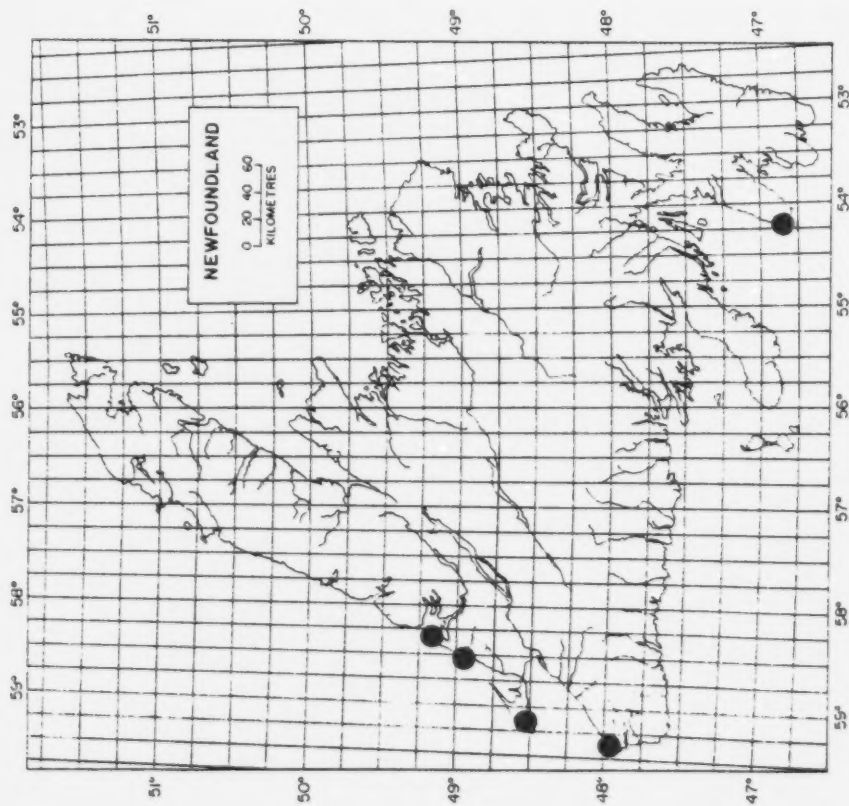
MAP 96: Gavia stellata



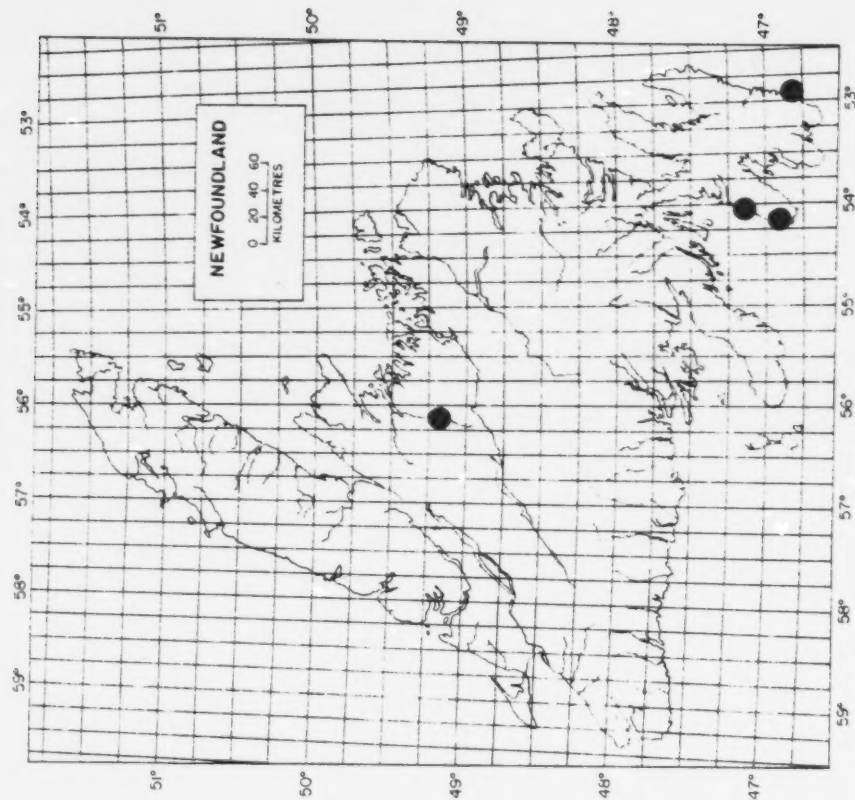
MAP 97: Fulmarus glacialis



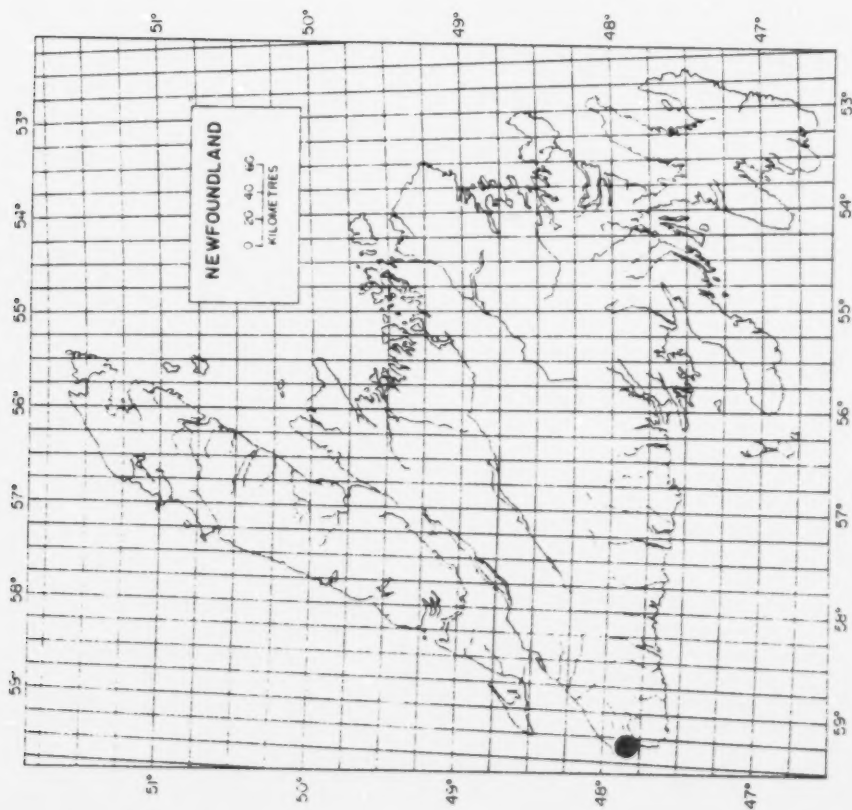
MAP 98: Puffinus puffinus



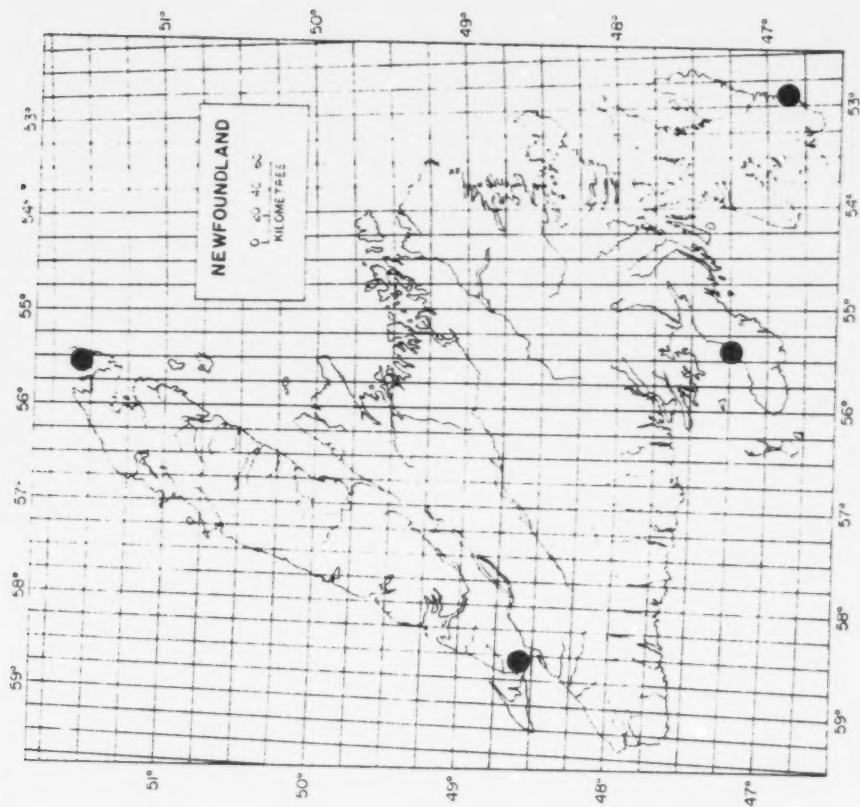
MAP 99: Phalacrocorax carbo



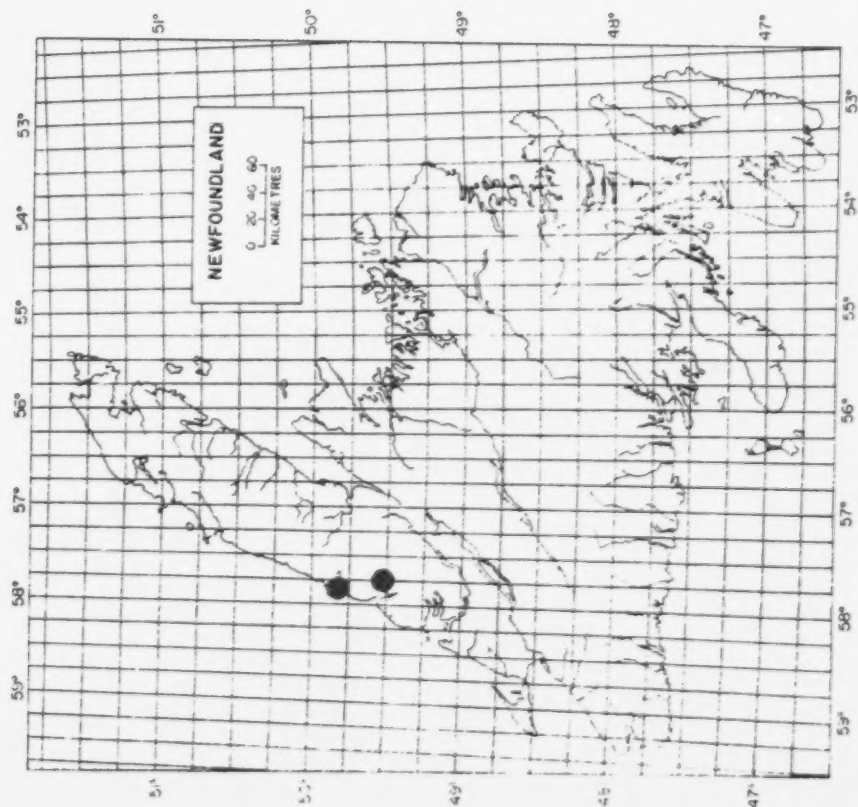
MAP 100: Phalacrocorax auritus



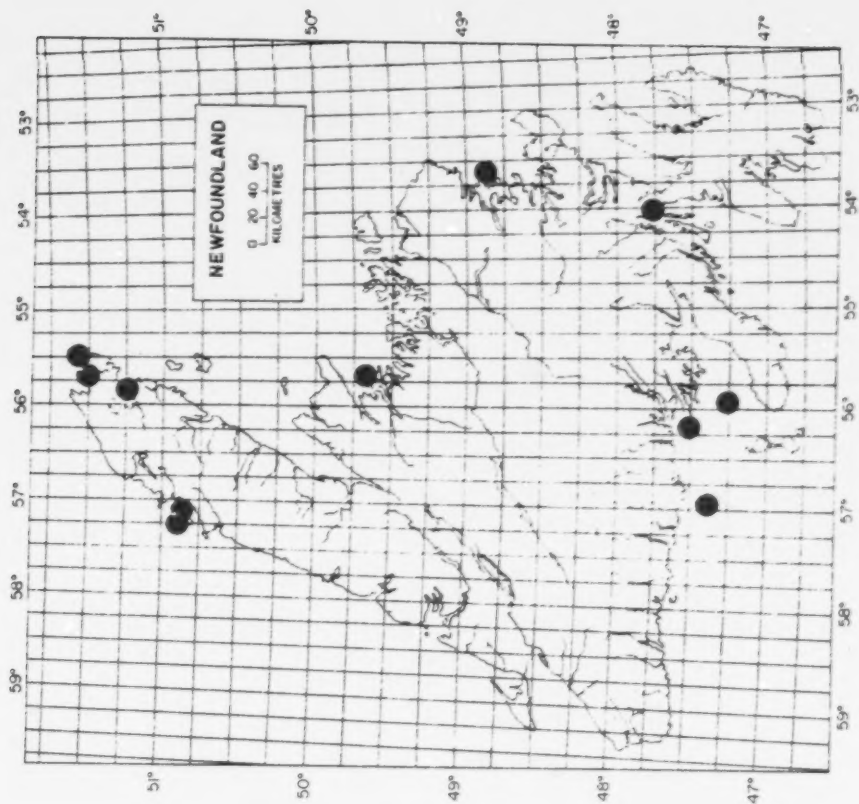
MAP 101: Anas americana



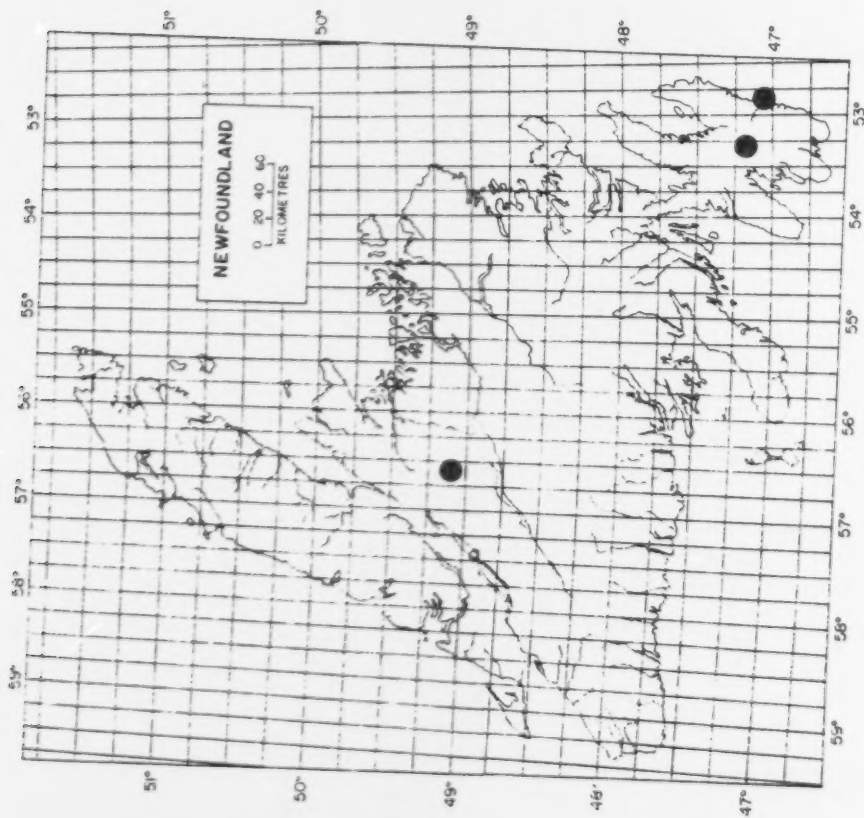
MAP 102: Aythya marila



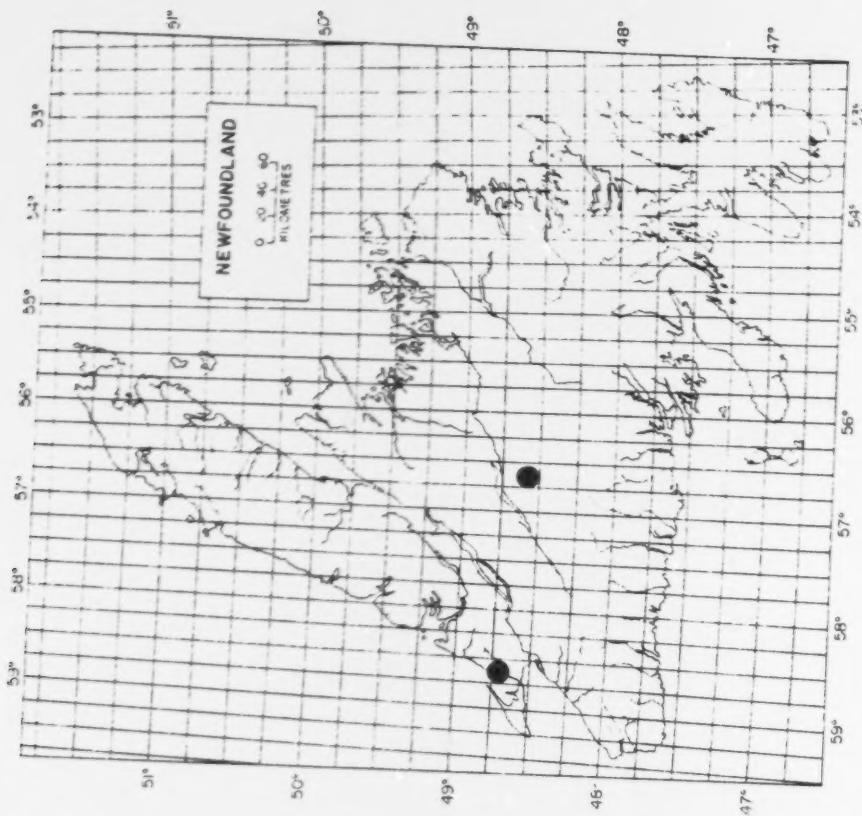
MAP 103: Histrionicus histrionicus



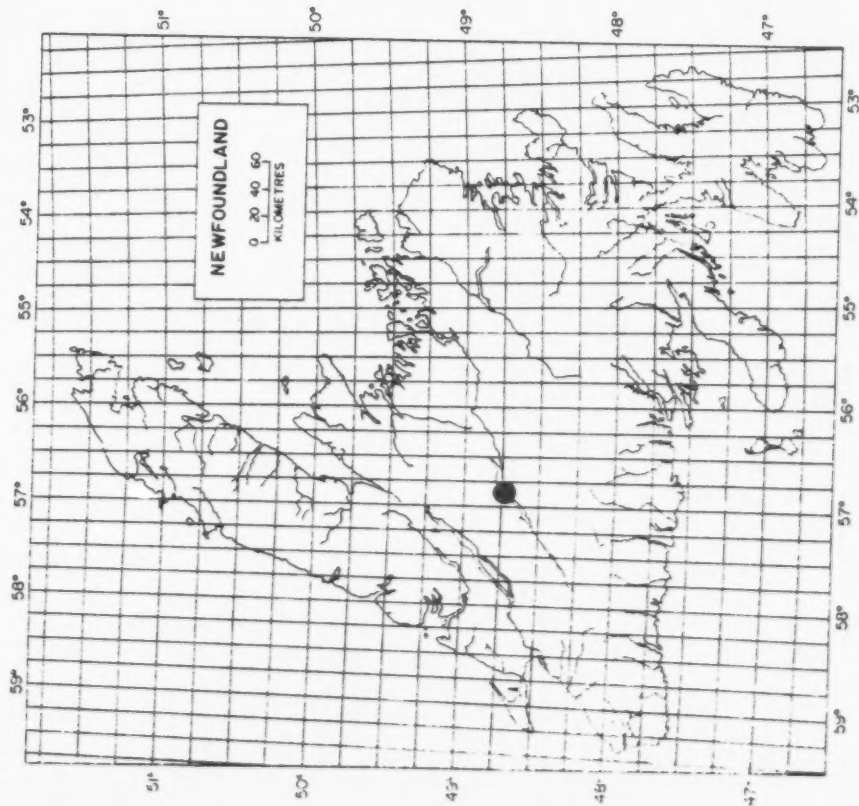
MAP 104: Somateria mollissima



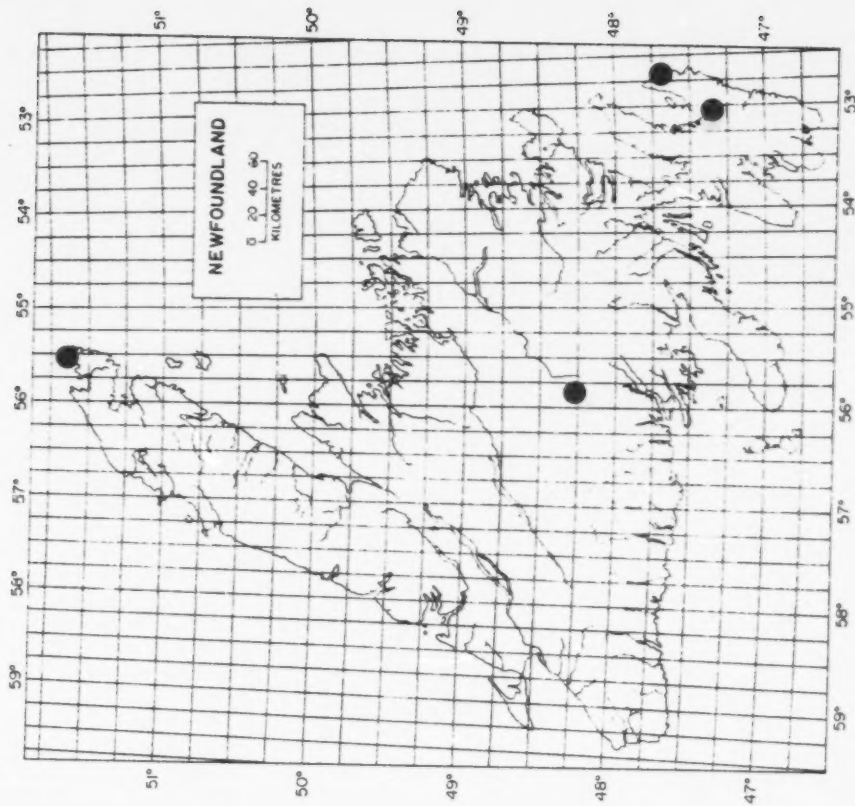
MAP 105: Melanitta nigra



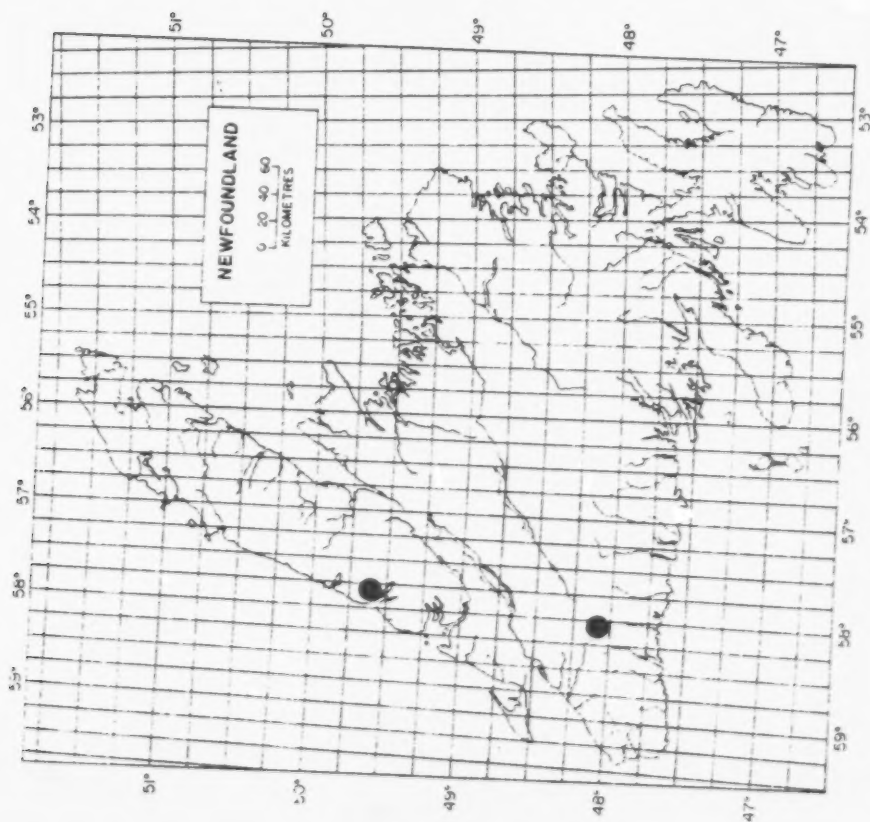
MAP 106: Accipiter gentilis



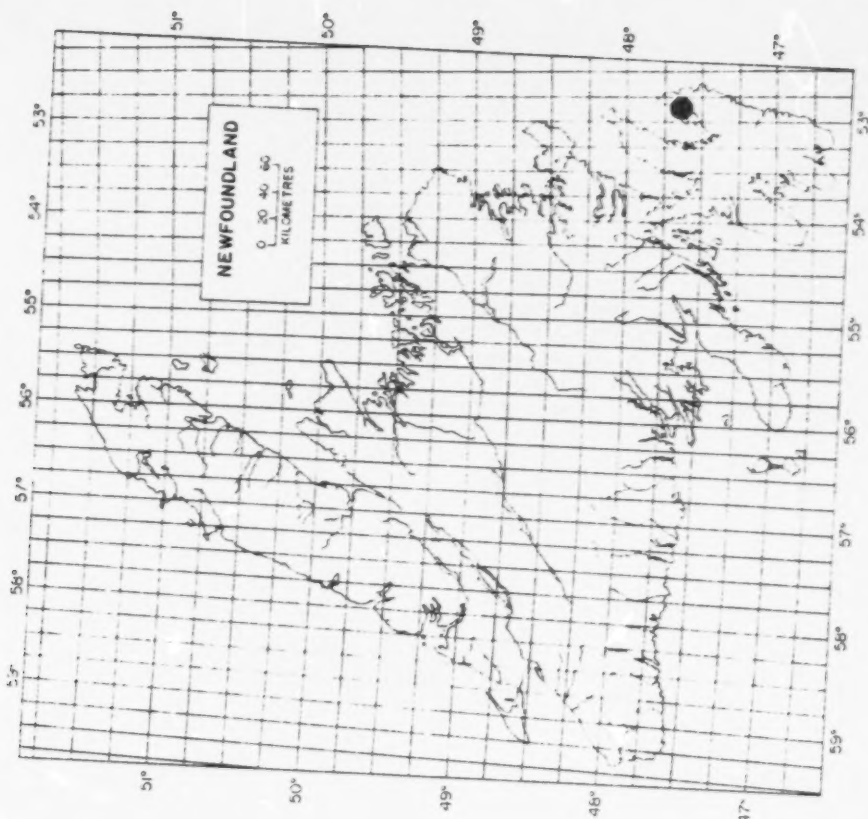
MAP 107: Accipiter striatus



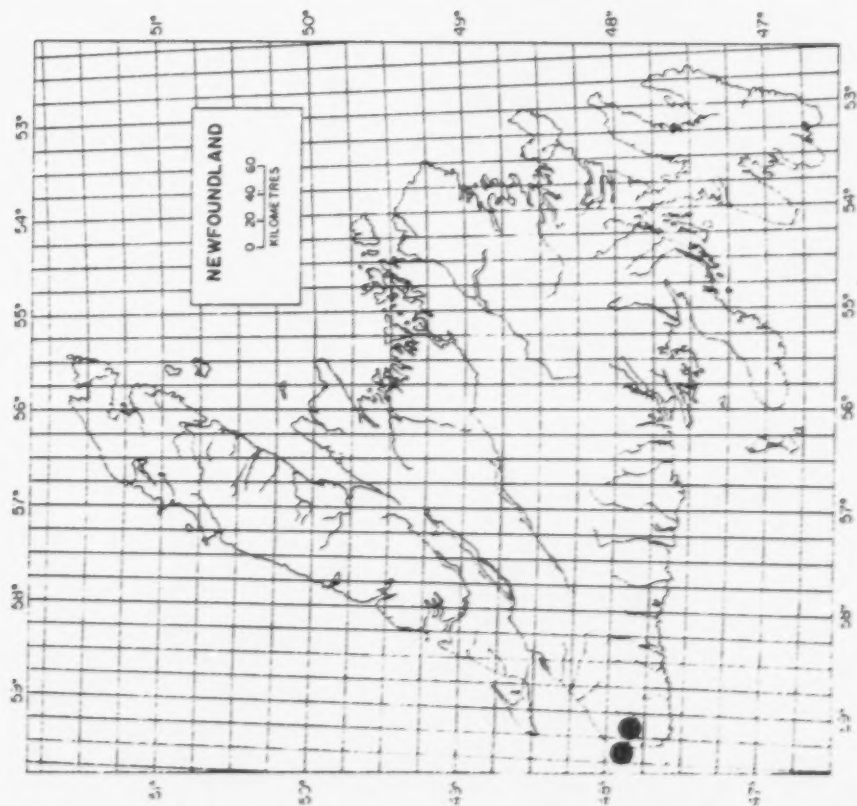
MAP 108: Buteo lagopus



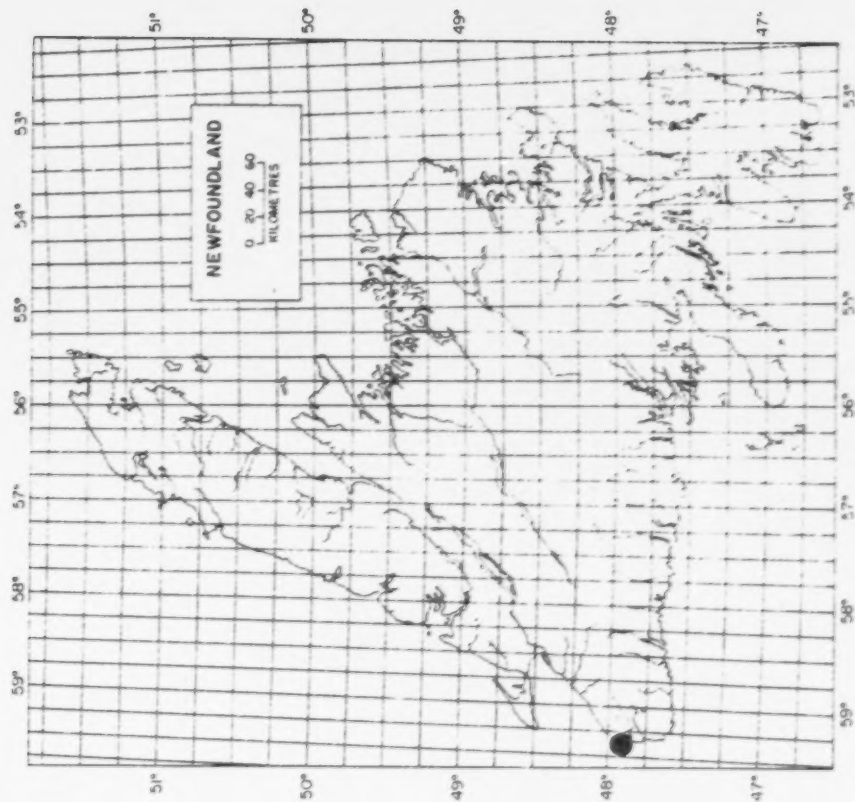
MAP 109: Lagopus mutus



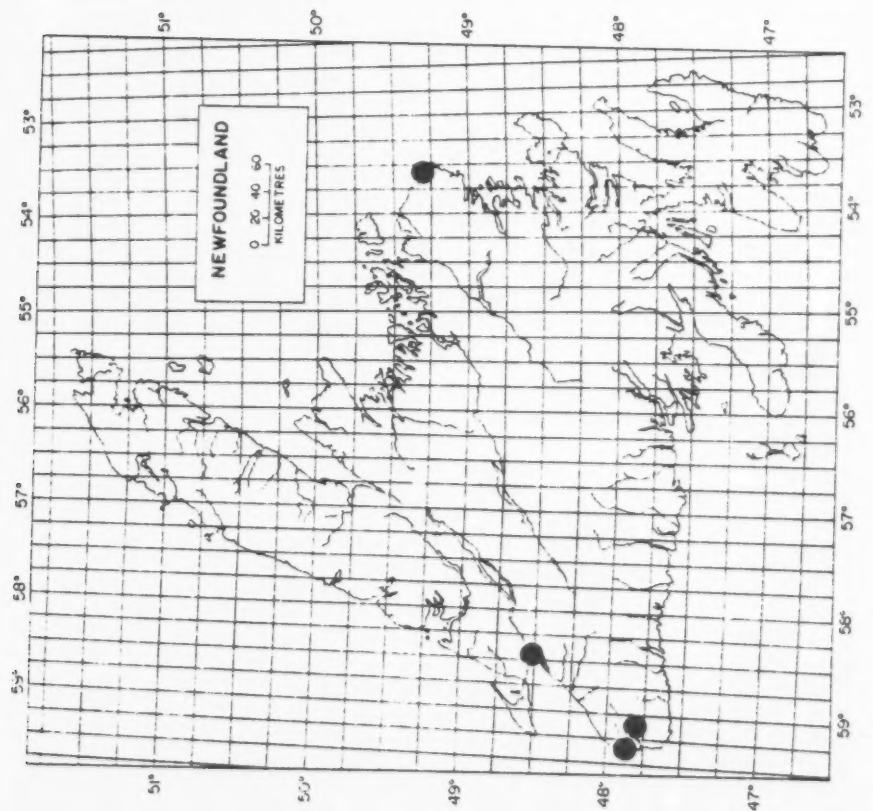
MAP 110: Phasianus colchicus



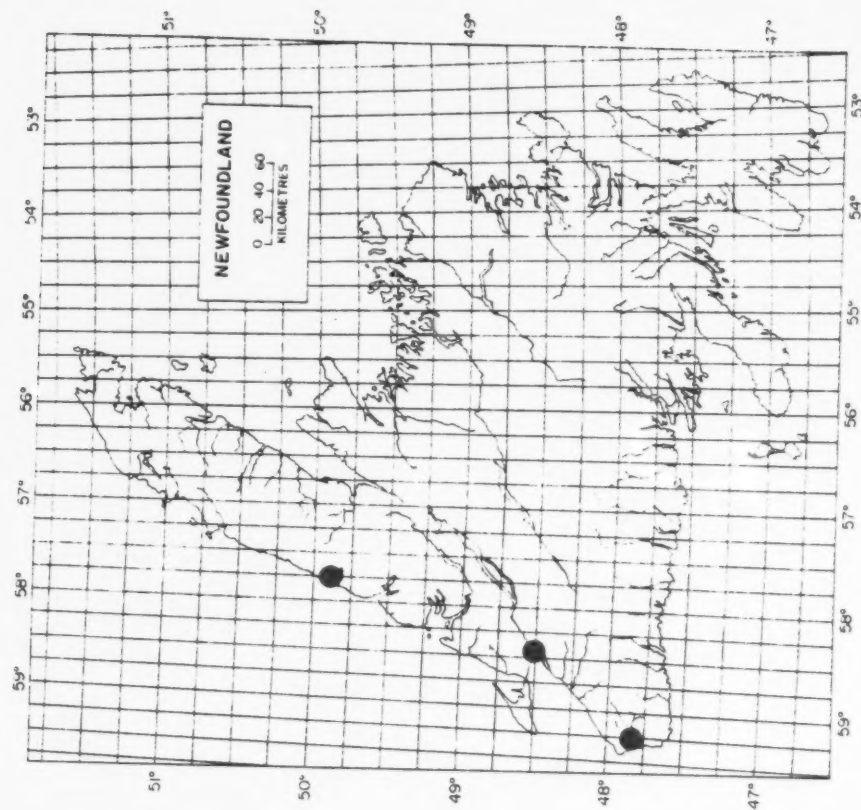
MAP 111: Rallus limicola



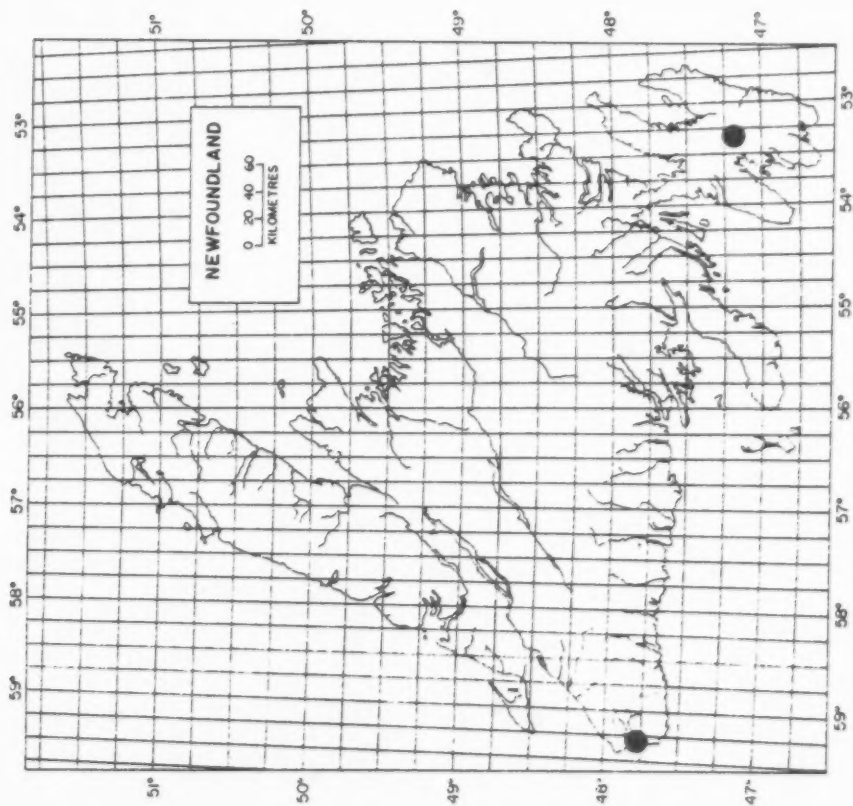
MAP 112: Porzana carolina



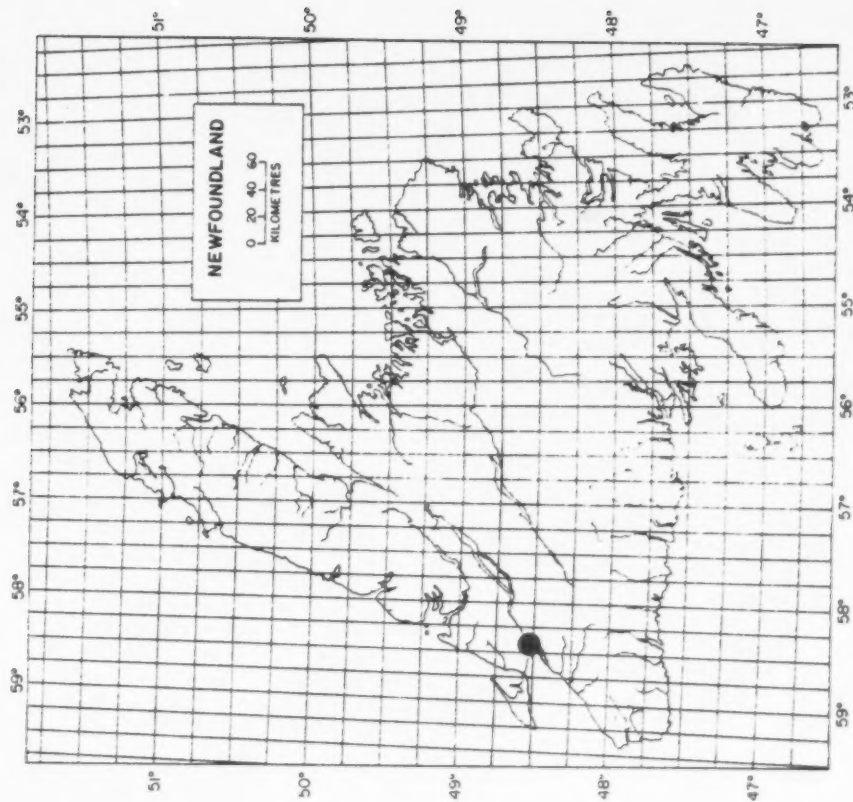
MAP 113: *Charadrius melodus*



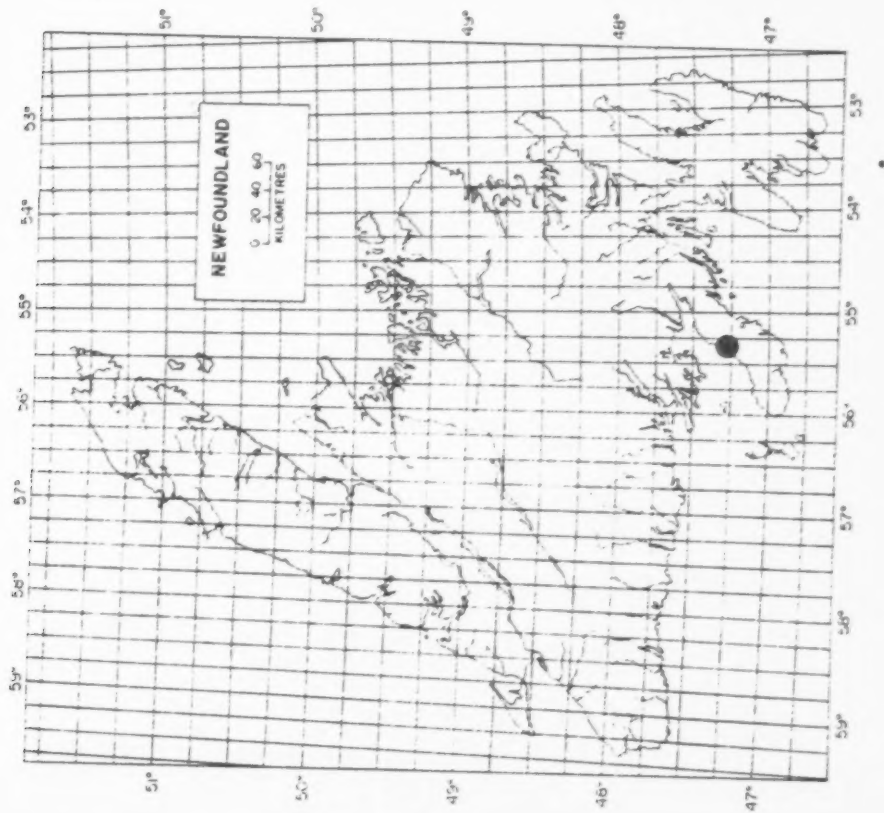
MAP 114: *Charadrius vociferus*



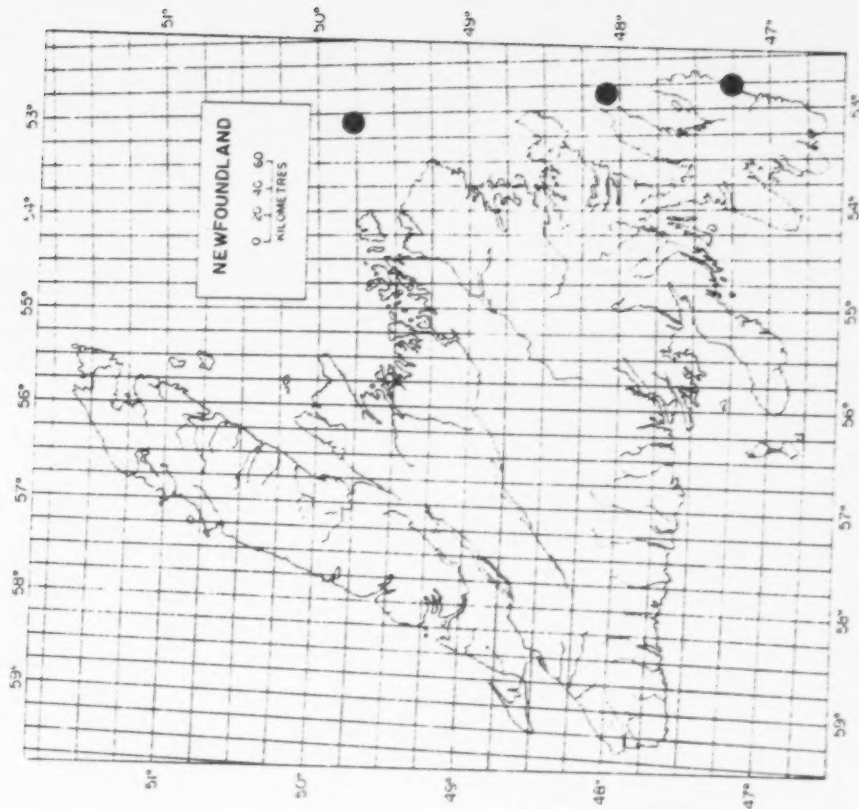
MAP 115: Scolopax minor



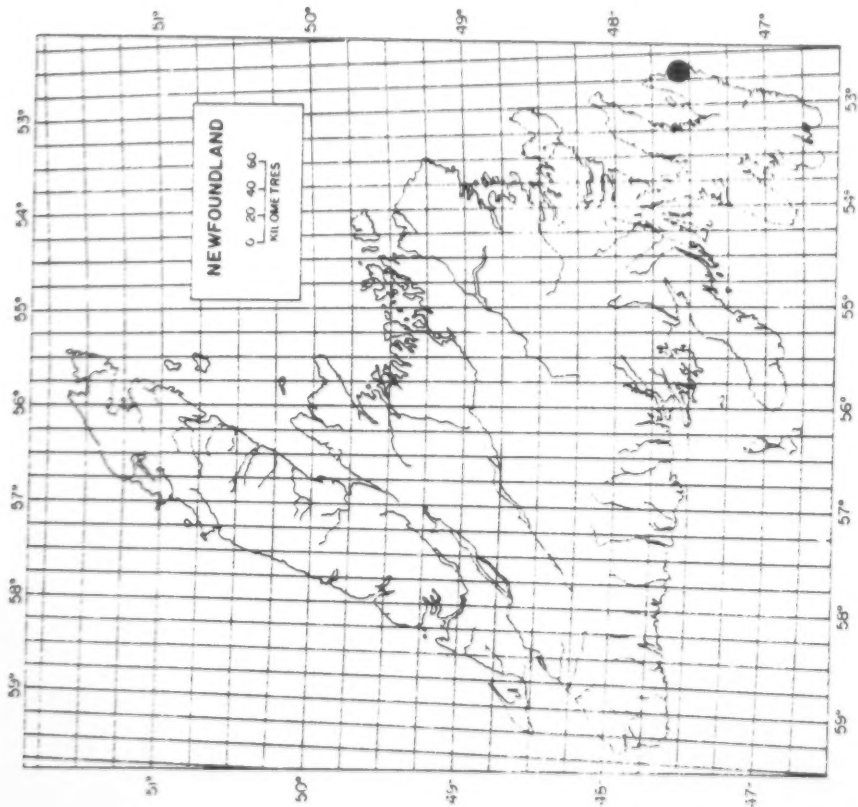
MAP 116: Larus ridibundus



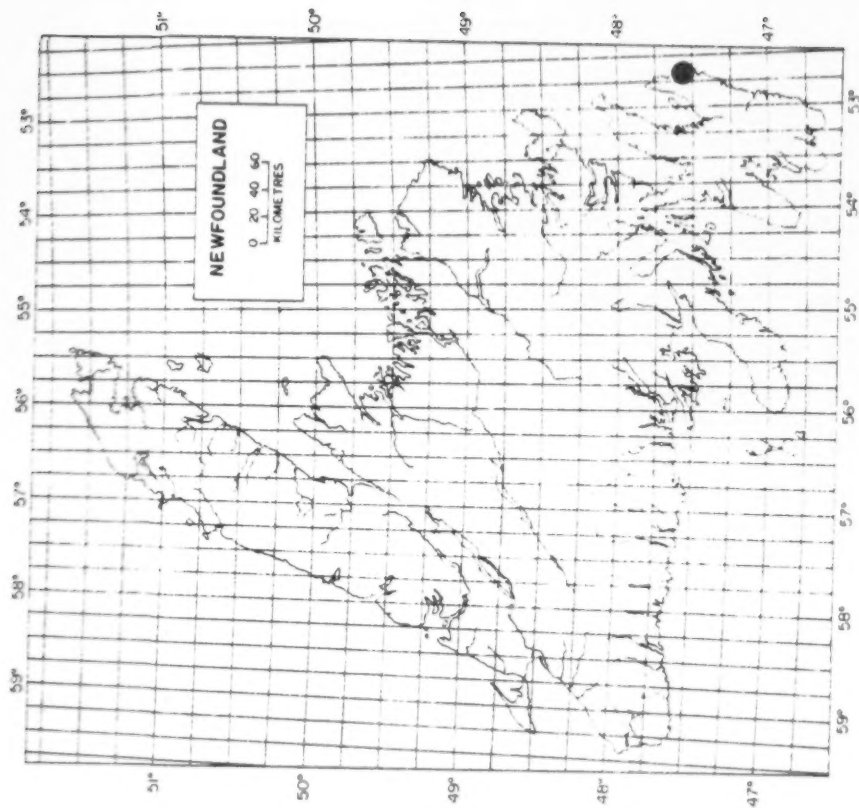
MAP 117: Sterna caspia



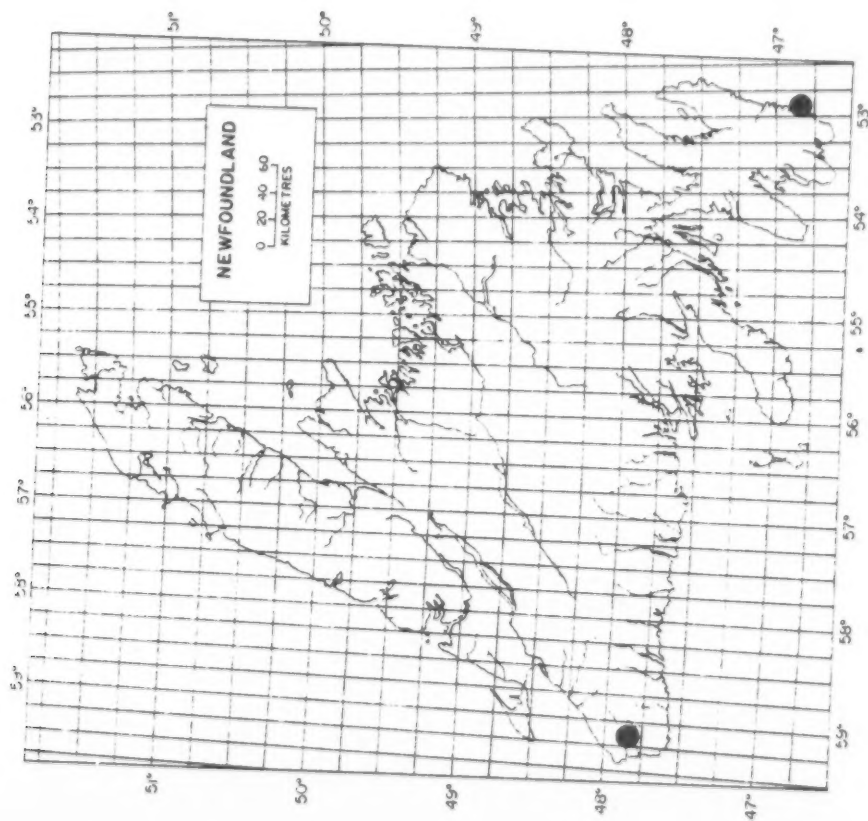
MAP 118: Uria lomvia



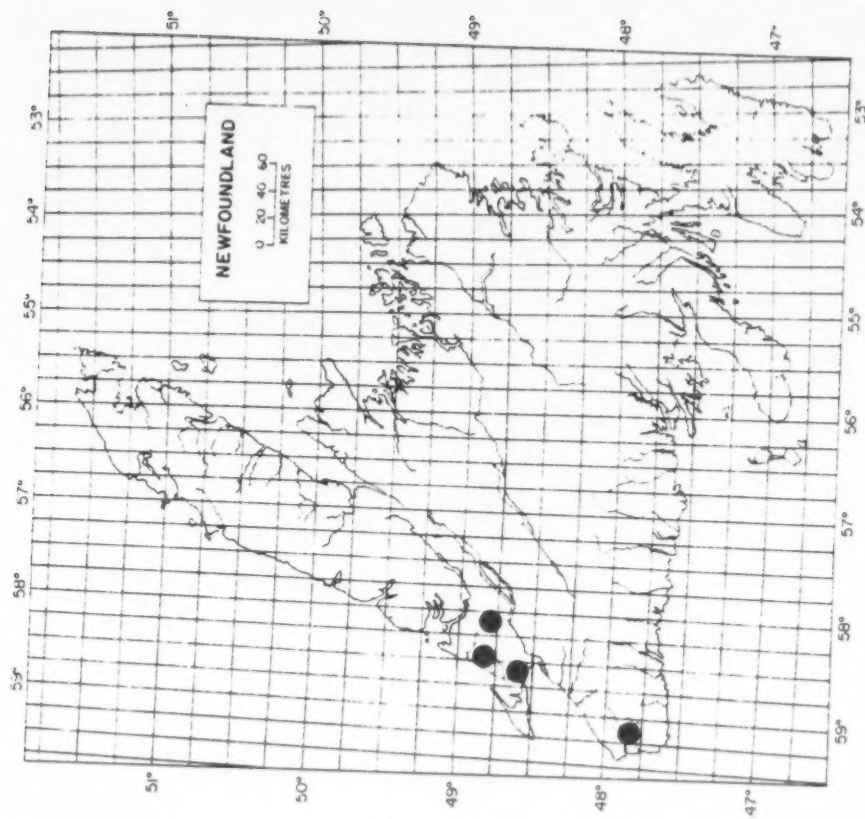
MAP 119: Archilochus colubris



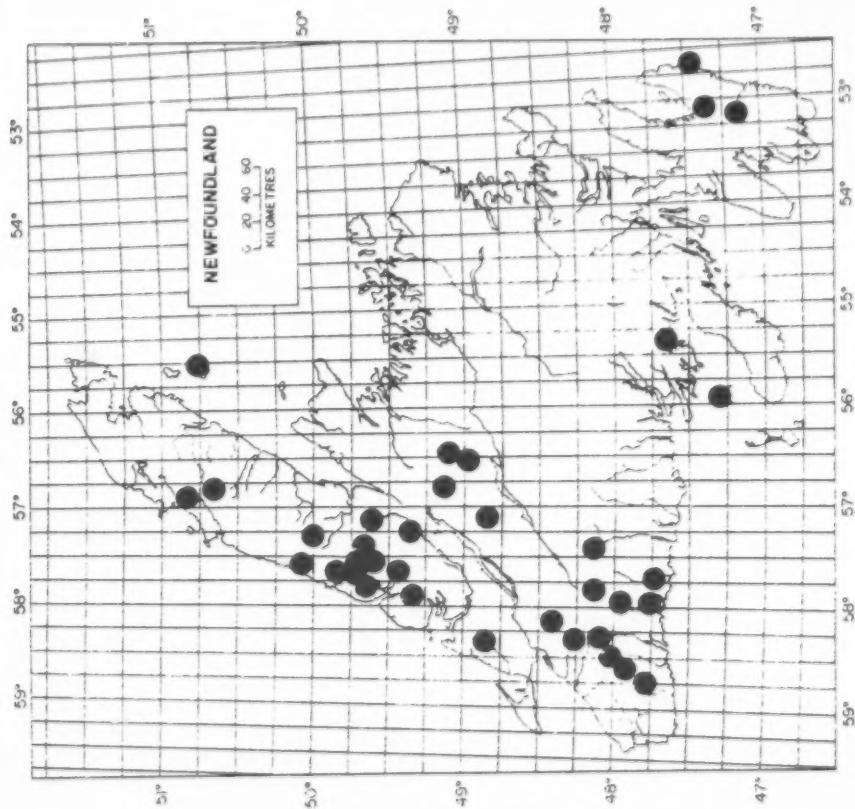
MAP 120: Mimus polyglottos



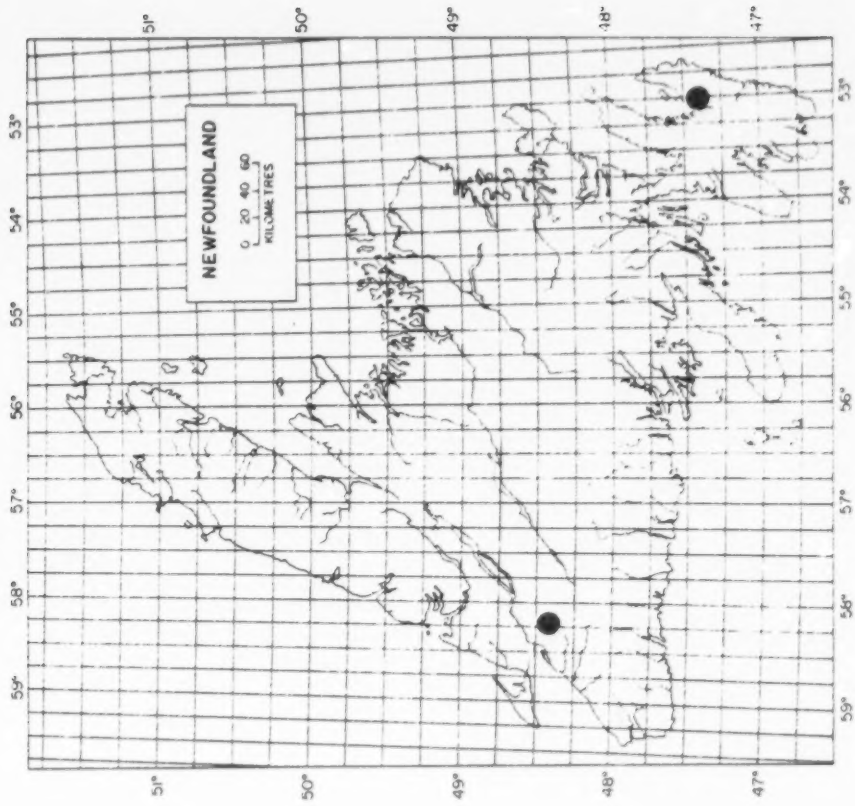
MAP 121: Quiscalus quiscula



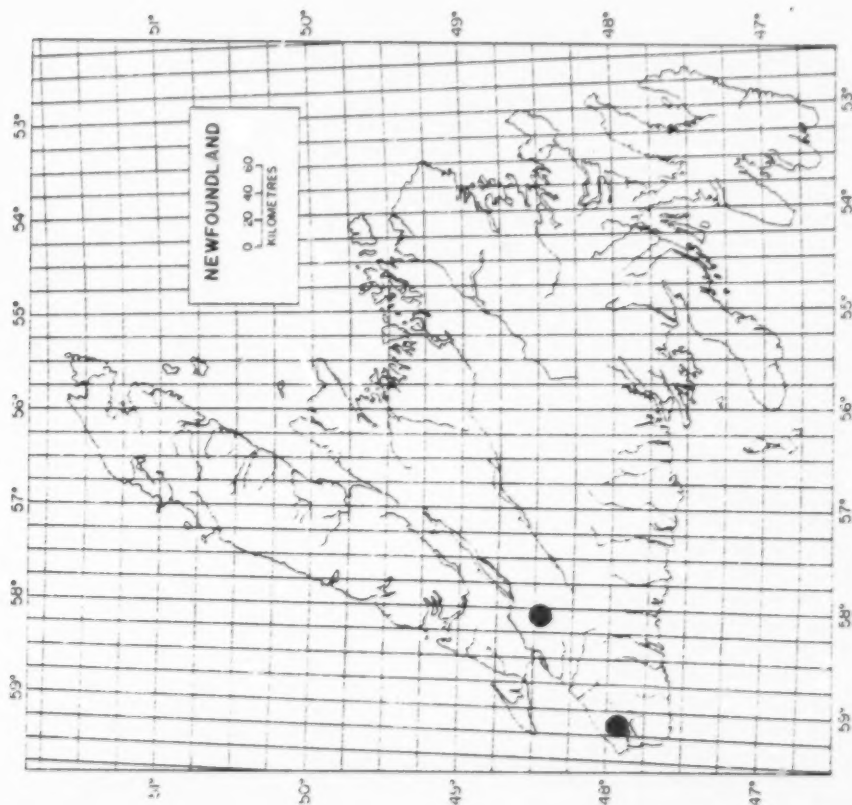
MAP 122: Myotis keenii



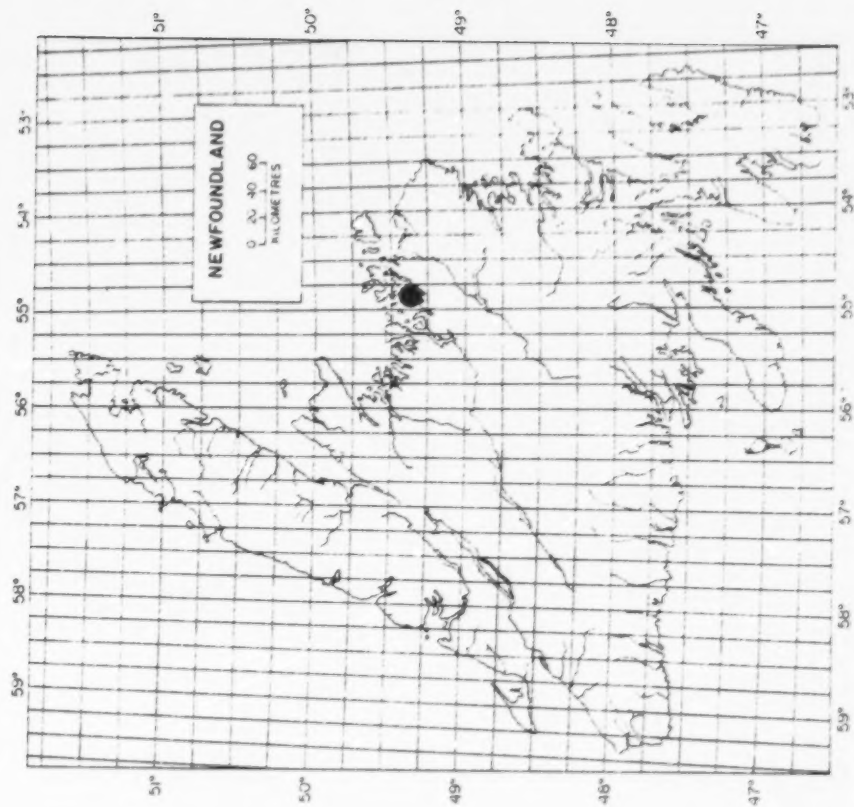
MAP 123: Lepus arcticus



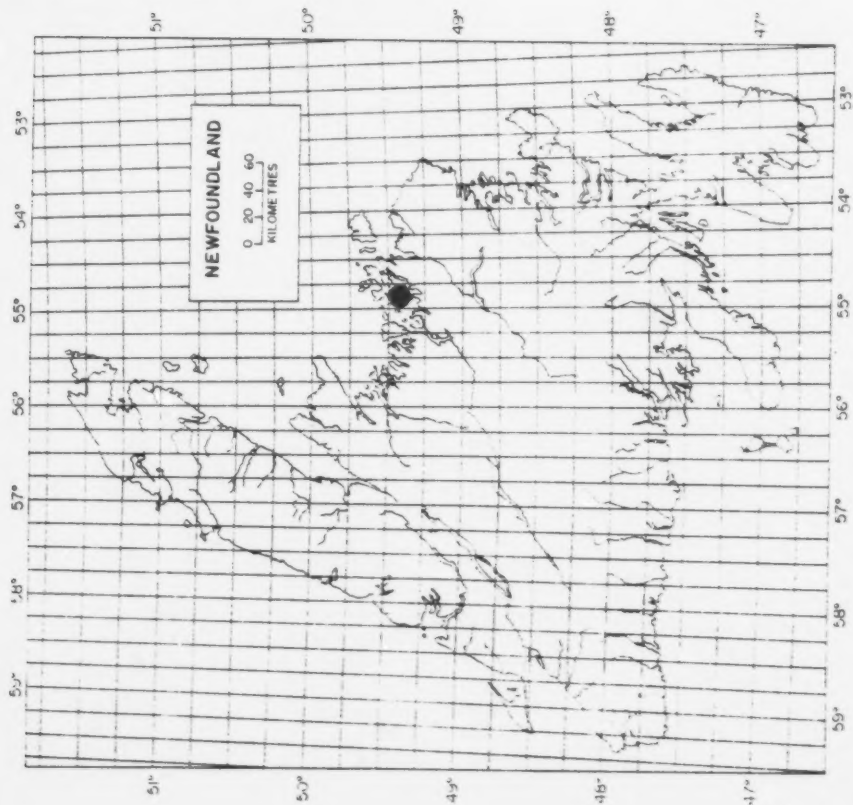
MAP 124: Tamias striatus



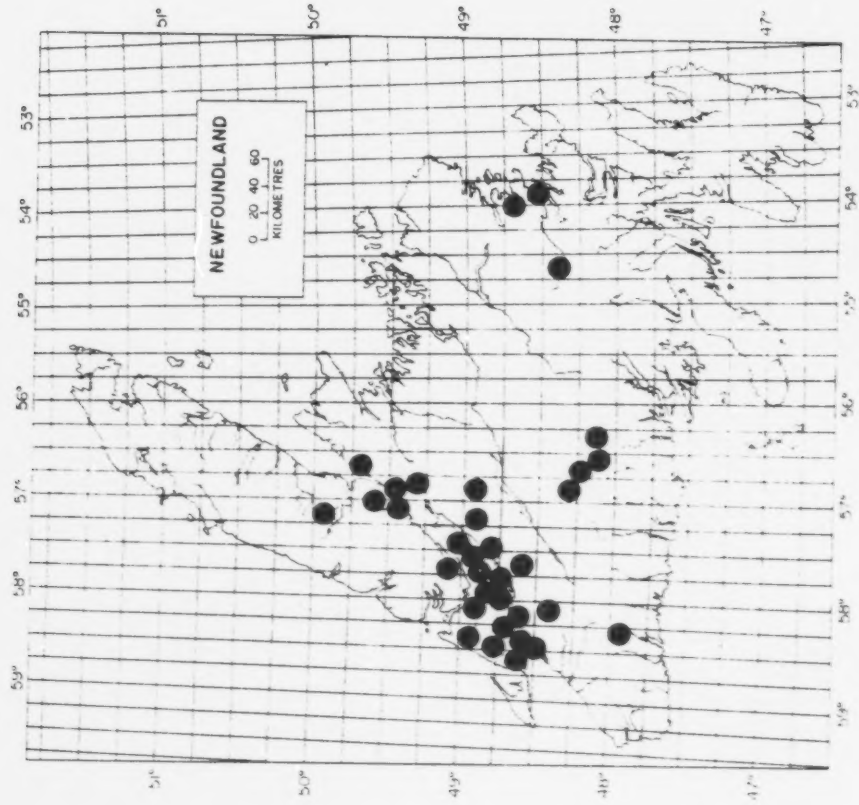
MAP 125: Peromyscus maniculatus



MAP 126: Clethrionomys gapperi



MAP 127: *Clethrionomys glareolus*



MAP 128: *Martes americana*